Government
Publications

SESSIONAL PAPERS.

VOL. XXVIII.—PART V.

SECOND SESSION EIGHTH LEGISLATURE

OF THE

PROVINCE OF ONTARIO.

SESSION 1896.

TORONTO:
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BY WARWICK BROS. & RUTTER, 68 AND 70 FRONT STREET WEST.
1896.

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LIST OF SESSIONAL PAPERS.

ARRANGED ALPHABETICALLY.

TITLE.	No.	REMARKS.
Accounts, Public	3	*Printed.*
Actions and References, pending	58	*Not printed.*
Agricultural College, Report	18	*Printed.*
Agriculture and Arts, Report	28	"
Archæological, Report (part of)	2	"
Asylums, Report	11	"
Bee-Keepers' Association, Report	22	*Printed.*
Births, Marriages and Deaths, Report	30	"
Blind Institute, Report	15	"
Bonds and Securities	59	*Not printed.*
Burlington Beach, correspondence	70	"
Cattle Breeders' Association	27	*Printed.*
Central Prison, Stock in Industrial Department	61	"
do agreement *re* binder twine	65	"
do cost of machinery *re* binder twine	67	"
do Massie charges	69	*Not printed.*
Childrens' Protection Act, Report	17	*Printed.*
Crown Lands, Report	5	"
Dairymen and Creameries, Report	24	*Printed.*
Deaf and Dumb Institute, Report	16	"
Division Courts, Report	7	"
Dominion Cattle Breeders' Association, Report	27	"
Doyle, Judge, Surrogate fees	42	*Not printed.*
Dysart, water lot	49	"
Education, Orders in Council in 1895	50	*Printed.*
do Ottawa Separate Schools	1	"
do Report	2	"
do affiliation, School of Pedagogy	64	"
do publication of Writing Course	71	"
do do Physical Science	72	"
do do Readers	73	"
do Normal Schools in London	52	*Not printed.*
do children passing leaving examinations	80	"

Title.	No.	Remarks.
Elections, return from Records of	41	*Printed.*
Elgin House of Industry Report	54	*Not printed.*
Elliott, Junior Judge, Surrogate fees	66	"
Entomological Society, Report	4	*Printed.*
Estimates	19	"
Factories, Report	29	*Printed.*
Farmers' Institutes, Report	25	"
Forestry, Report	40	"
Fruit, Experiment Stations	21	"
" Growers', Report	20	"
Game and Fish, Report	33	*Printed.*
Gaols, Common, Report	12	"
Hazelwood and Whalen, pulpwood agreement	74	*Not printed.*
Health, Report	35	*Printed.*
Hospitals, Report	14	"
Immigration, Report	36	*Printed*
Industries, Bureau, Report	6	"
Insurance, Report	10	"
Jones, Judge, commutation	43	*Not printed.*
Legal Offices, Report	31	*Printed.*
Library Report	78	"
License Commissioners, names, etc	47	*Not printed.*
Medical Council, prosecutions	48	*Not printed.*
Mosgrove, Judge, Surrogate fees	44	"
Municipal indebtedness	68	*Printed.*
Murdock, William	81	*Not printed.*
Normal Schools in London	52	*Not printed.*
Ottawa Separate Schools, Report	1	*Printed.*
Printing and Binding, amounts paid for	76	*Not printed.*
Poultry and Pet Stock, Report	23	*Printed.*
Public Accounts	3	"
Public Officers	63	*Not printed.*
Public Works, Report	9	*Printed.*
Pulpwood agreement	74	*Not printed.*
Queen Victoria Niagara Falls Park, Report	32	*Printed.*
Quiball, Police Magistrate	53	*Not printed.*
Refuge, Houses of	13	*Printed.*

Title.	No.	Remarks.
Registrar's fees	62	*Printed.*
Secretary and Registrar's Report	77	"
Sheep and Swine Breeders', Report	26	"
Smith, John W., Bailiff in Peel	56	*Not printed.*
Statutes, distribution	46	"
Stephenson, lands flooded in	60	"
Tavern and Shop Licenses, Report	8	*Printed.*
Titles, Report of Master of	55	"
Toronto General Trusts Company	57	*Not printed.*
Toronto University, Auditor's Report	37	*Printed.*
do Discipline Report	38	"
do Finance Report	39	"
do positions on staff	51	*Not printed.*
do applications for professorships	75	"
do affiliation with Oxford and Cambridge	79	*Printed.*
Upper Canada College, Report	45	*Not printed.*

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LIST OF SESSIONAL PAPERS.

Arranged in Numerical Order with their Titles at full length; the dates when Ordered and when presented to the Legislature; the name of the Member who moved the same, and whether Ordered to be Printed or not.

CONTENTS OF PART I.

No. 1.. Report of the Commission relating to the Ottawa Separate Schools. Presented to the Legislature 12th February, 1896 (*Printed.*)

No. 2.. Report of the Minister of Education of the year 1895, with the Statistics of 1894. Presented to the Legislature 27th February, 1896. (*Printed.*)

No. 3.. Public Accounts of the Province for the year 1895. Presented to the Legislature 17th February, 1896. (*Printed.*)

No. 4.. Estimates for the Service of the Province until after Estimates of the year are finally passed. Presented to the Legislature 18th February, 1896. (*Not printed.*) Estimates for the year 1896. Presented to the Legislature 19th February, 1896. (*Printed.*) Estimates (supplementary) for the year 1896. Presented to the Legislature 1st April, 1896. (*Printed.*)

CONTENTS OF PART II.

No. 5.. Report of the Commissioner of Crown Lands for the year 1895. Presented to the Legislature 13th March. (*Printed.*)

No. 6.. Report of the Department of Immigration for the year 1895. Presented to the Legislature 20th March, 1896. (*Printed.*)

No. 7.. Report of the Inspector of Division Courts for the year 1895. Presented to the Legislature 20th March, 1896. (*Printed.*)

No. 8.. Report on the working of the Tavern and Shop Licenses Acts for the year 1895. Presented to the Legislature 12th February, 1896. (*Printed.*)

No. 9.. Report of the Commissioner of Public Works for the year 1895. Presented to the Legislature 20th February, 1896. (*Printed.*)

No. 10.. Report of the Inspector of Insurance and Registrar of Friendly Societies for the year 1895. Presented to the Legislature 12th February, 1896. (*Printed.*)

CONTENTS OF PART III.

No. 11.. Report upon the Lunatic and Idiot Asylums of the Province for the year ending 30th September, 1895. Presented to the Legislature 13th February, 1896. (*Printed.*)

No. 12.. Report upon the Common Goals, Prisons and Reformatories of the Province for the year ending 30th September, 1895. Presented to the Legislature 20th February, 1896. (*Printed.*)

No. 13.. Report upon the Houses of Refuge and Orphan and Magdalen Asylums of the Province for the year ending 30th September, 1895. Presented to the Legislature, 12th February, 1896. (*Printed.*)

No. 14.. Report upon the Hospitals of the Province for the year ending 30th September, 1895. Presented to the Legislature 11th March, 1896. (*Printed.*)

No. 15.. Report upon the Institution for the Education of the Blind, Brantford, for the year ending 30th September, 1895. Presented to the Legislature 12th February, 1896. (*Printed.*)

No. 16.. Report upon the Institution for the Education of the Deaf and Dumb, Belleville, for the year ending 30th September, 1895. Presented to the Legislature 12th February, 1896. (*Printed.*)

No. 17.. Report of the Work under the Children's Protection Act for the year 1895. Presented to the Legislature 12th February, 1896. (*Printed.*)

CONTENTS OF PART IV.

No. 18.. Report of the Ontario Agricultural College and Experimental Farm and Experimental Union for the year 1895. Presented to the Legislature 6th March, 1896. (*Printed.*)

No. 19.. Report of the Entomological Society of Ontario for the year 1895. Presented to the Legislature 23rd March, 1896. (*Printed.*)

No. 20.. Report of the Fruit Growers' Association of Ontario for the year 1895. Presented to the Legislature 11th March, 1896. (*Printed.*)

No. 21.. Report of the Fruit Experiment Stations of Ontario, for the year 1895. Presented to the Legislature 11th March 1896. (*Printed.*)

CONTENTS OF PART V

No. 22.. Report of the Bee Keepers' Association of the Province for the year 1895. Presented to the Legislature 11th March, 1896. (*Printed.*)

No. 23.. Report of the Poultry and Pet Stock Associations of the Province for the year 1895. Presented to the Legislature 11th March, 1896. (*Printed.*)

No. 24.. Report of the Dairymens and Creameries' Associations of the Province for the year 1895. Presented to the Legislature 11th March, 1896. (*Printed.*)

No. 25.. Report of the Superintendent of Farmers' Institutes of the Province for the year 1895. Presented to the Legislature 11th March, 1896. (*Printed.*)

No. 26.. Report of the Sheep and Swine Breeders' Associations of the Province for the year 1895. Presented to the Legislature 11th March, 1896. (*Printed.*)

No. 27... Report of the Dominion Cattle Breeders' Association of the Province for the year 1895. Presented to the Legislature 31st March, 1896. (*Printed.*)

CONTENTS OF PART VI.

No. 28... Report of the Agriculture and Arts Association for the year 1895. Presented to the Legislature 31st March, 1896,

No. 29.. Report of the Inspectors of Factories for the Province for the year 1895. Presented to the Legislature 11th March, 1896. (*Printed.*)

No. 30... Report upon the Registration of Births, Marriages and Deaths in the Province for the year 1894. Presented to the Legislature 12th February, 1896. (*Printed.*)

No. 31.. Report of the Inspector of Legal Offices for the year 1895. Presented to the Legislature 20th March, 1896. (*Printed.*)

No. 32.. Report of the Commissioners for the Queen Victoria Niagara Falls Park for the year 1895. Presented to the Legislature 5th March, 1896. (*Printed.*)

No. 33.. Report of the Ontario Game and Fish Commission. Presented to the Legislature 28th February, 1896. (*Printed.*)

No. 34.. Report of the Bureau of Mines for the year 1895. Presented to the Legislature 31st March, 1896. (*Printed.*)

CONTENTS OF PART VII.

No. 35.. Report of the Board of Health for the year 1895. Presented to the Legislature 19th March, 1896. (*Printed.*)

No. 36.. Report of the Bureau of Industries for the year 1895 Presented to the Legislature 11th March, 1896. (*Printed.*)

No. 37.. Auditor's Report to the Board of Trustees on Capital and Income Account of the University of Toronto. Presented to the Legislature 12th February, 1896. (*Printed.*)

No. 38.. Report of the Commissioners on the Discipline and other matters in the University of Toronto. Presented to the Legislature 12th February, 1896. (*Printed.*)

No. 39.. Report of the Standing Committee on Finance of the University of Toronto. Presented to the Legislature 12th February, 1896. (*Printed.*)

No. 40.. Report of the Clerk in charge of the Forestry Branch, Crown Lands Department. Presented to the Legislature 31st March, 1896. (*Printed.*)

CONTENTS OF PART VIII.

No. 41.. Return from the Records of the several Elections to the Legislative Assembly in the Electoral Districts of West Algoma; the North Riding of the County of Brant, Kingston, South Wentworth and West Wellington, since the General Election of 1894, shewing: (1) The number of Votes polled for each Candidate in each Electoral District. (2) The majority whereby each successful Candidate was returned. (3) The total number of Votes polled in each District. (4) The total number of Votes remaining unpolled. (5) The number of names on the Voters' List in each District. (6) The number of Ballot Papers sent out, and how disposed of in each Polling Sub-Division. (7) The number of Tendered Ballots sent out. (8) The population of each District as shown by the last Census. Presented to the Legislature 13th February, 1896. (*Printed.*)

No. 42.. Copy of an Order in Council directing the payment out of the Surplus Surrogate fees of $115, to His Honour Judge Doyle. Presented to the Legislature, 12th February, 1896. (*Not printed.*)

No. 43.. Copy of an Order in Council increasing the commutation paid to His Honour Judge Jones. Presented to the Legislature 12th February, 1896. (*Not printed.*)

No. 44.. Copy of an Order in Council directing the payment out of the Surplus Surrogate fees of $500 to His Honour Judge Mosgrove Presented to the Legislature 12th February, 1896. (*Not printed.*)

No. 45.. Report of the Principal of Upper Canada College shewing the present attendance of pupils and also the statement of the Bursar for the year ending 30th June, 1895. Presented to the Legislature 12th February, 1896. (*Not printed.*)

No. 46.. Statement shewing distribution of Revised and Sessional Statutes for the year 1895. Presented to the Legislature 12th February, 1896. (*Not printed.*)

No. 47.. Return to an Order of the House of the Eleventh day of March, 1895, for a Return shewing the names, occupations and post office addresses of the License Commissioners of the Province for the years 1891-92-93 and 1894. Presented to the Legislature 12th February, 1896. Mr. *Ryerson.* (*Not printed.*)

No. 48.. Return to an Order of the House for the Third day of April, 1895, for a Return shewing the number of prosecutions instituted by agents or detectives of the Medical Council during the year 1894, for violations of the Medical Act, shewing the names of such prosecutors, the names of those prosecuted, the particular offence with which they were charged, and the fine or imprisonment imposed upon those persons convicted. Presented to the Legislature 12th February, 1896. Mr. *Caven.* (*Not printed.*)

No. 49.. Return to an Order of the House of the Third day of April, 1895, for a Return of copies of all applications for the purchase of the water lot in front of lot No. 15 in the 8th Concession of the Township of Dysart, in the County of Haliburton, and of all plans, petitions and correspondence relating to the issue of a patent of such water lot. Presented to the Legislature 12th February, 1896. Mr. *Carnegie.* (*Not printed.*)

No. 50.. Copies of Orders in Council relating to Educational matters approved of during the year 1895. Presented to the Legislature 13th February, 1896. (*Printed.*)

No. 51.. Return to an Order of the House of the Eleventh day of March, 1895. for a Return of copies of all letters received by the Minister of Education, and by other members of the Government, since the first day of January, 1891, recommending persons for positions on the staff of University College, and of the School of Practical Science. Presented to the Legislature 17th February, 1896. Mr. *Whitney.* (*Not printed.*)

No. 52.. Return to an Order of the House of the House of the Twenty-seventh day of March, 1895, for a Return of copies of all correspondence between any member of the Government and any person or persons referring to the establishment of a Normal School in the City of London, and a similar Return referring to the establishment of a Normal School in the Town of Woodstock. Presented to the Legislature 17th February, 1896. Mr. *Whitney.* (*Not printed.*)

No. 53.. Return to an Order of the House of the Third day of April, 1895, for a Return of copies of all correspondence between the Municipality of Sudbury and any member of the Government relating to W. A. Quiball, Police Magistrate of Sudbury. Presented to the Legislature 17th February, 1896. Mr. *Whitney.* (*Not printed.*)

No. 54.. Report of the Inspector of the Elgin House of Industry and Refuge, for the year 1895. Presented to the Legislature 18th February, 1896. (*Not printed.*)

No. 55.. Report of the Master of Titles for the year 1895. Presented to the Legislature 20th February, 1896. (*Printed.*)

No. 56.. Return to an Order of the House of the Tenth day of April, 1895, for a Return of copies of all correspondence, documents and writings, between any member of the Government, or any person or persons and the Government, in connection with the recent appointment of Mr. John W. Smith, of the Town of Brampton, as Bailiff of the First Division Court of the County of Peel, and of the dismissal of Mr. George Broddy. Presented to the Legislature, 21st February, 1896. Mr. *St. John.* (*Not printed.*)

No. 57.. Statement of the affairs of the Toronto General Trusts Company for the year 1895. Presented to the Legislature, 25th February, 1896. (*Not printed.*)

No. 58.. Return to an Order of the House of the Tenth day of April, 1895, for a Return, shewing all actions and references pending before Local Masters which have been pending for more than six months, with the dates, when the matters were brought into the Master's office, the present condition of such matters, and the reasons why same are not disposed of. Mr. *Middleton.* Presented to the Legislature, 27th February, 1896. (*Not printed.*)

No. 59.. Detailed Statement of all Bonds and Securities recorded in the Provincial Registrar's Office since the last return submitted to the Legislative Assembly upon the eighth day of March, A.D. 1895, made in accordance with the provisions of R.S.O., cap. 15. sec. 23. Presented to the Legislature, 28th February, 1896. (*Not printed.*)

No. 60.. Return to an Order of the House of the Twenty-sixth day of February, 1896, for a Return of copies of all correspondence, papers and documents, except that already brought down, between any member or officer of the Government, or any other person or persons, on the subject of claims for damages for the flooding of lands in the Township of Stevenson by the Government dam at the outlet of Mary Lake. Also, copies of all reports made by any Departmental officer, or any other person, to the Government, or any Department thereof, on the subject of such claims, or the damages occasioned by such works. Presented to the Legislature, 5th March, 1896. Mr. *Langford.* (*Not printed.*)

No. 61.. Return to an Order of the House of the Twenty-first day of February, 1896, for a Return shewing (1) the amount of stock on hand in each of the Industrial Departments of the Central Prison, at the stock taking on 30th September, 1894, and on 30th September, 1895. (2) The amount of material purchased for each of said departments during the year ending 30th September, 1895. (3) The amount of wages of all foremen and instructors employed in each of said shops during the year ending 30th September, 1895. (4) The number of days labour of prisoners detailed to each of said shops during said year, shewing the total number detailed whether employed or not. (5) The amount received, and amount still

owing for the produce of said industries sold during the year ending 30th September, 1895, and the amount received during the year ending 30th September, 1895, on account of sales previous to 30th September, 1894. Presented to the Legislature, 5th March, 1896. Mr. *Matheson.* (*Printed.*)

No. 62.. Statement of Returns forwarded to the office of the Provincial Secretary, of all fees and emoluments received by the Registrars of Deeds, for the Province of Ontario, for the year 1895, made in accordance with the provisions of 56 Victoria, cap. 21, sections 117, 120 and 121, and 57 Victoria, cap. 9, sections 6 and 7, with which are contrasted the gross amount of fees for the years 1893 and 1894. Presented to the Legislature, 6th March, 1896. (*Printed.*)

No. 63 . Copy of an Order of His Honour the Lieutenant-Governor in Council approved of the 15th day of August, 1895, approving of the Companies therein mentioned, as Security for Public Officers. Presented to the Legislature, 6th March, 1896. *Not printed.*

No. 64.. Copy of an Agreement, dated Third day of March, 1896, between the Minister of Education and the Board of Education of the City of Hamilton, affiliating the Ontario School of Pedagogy with the Hamilton Collegiate Institute. Presented to the Legislature 9th March, 1896. (*Printed.*)

No. 65.. Copy of an Agreement between the Inspector of Prisons and Public Charities and P. L. O'Connor, relative to the manufacture of binder twine at the Central Prison. Also, of Order in Council approved by His Honour the Lieutenant-Governor on the 1st day of October, 1895, authorizing the said Agreement. Presented to the Legislature 11th March, 1896. (*Printed.*)

No. 66.. Copy of an Order in Council, approved by His Honour the Lieutenant-Governor the 10th day of March, 1896, fixing the amount to be paid to His Honour Judge Elliott, Junior Judge of the County of Middlesex, out of the surplus Surrogate fees for the year 1895. Presented to the Legislature 13th March, 1896. (*Not printed.*)

No. 67.. Return to an Order of the House of the Sixth day of March, 1896, for a Return shewing the cost of the machinery, the cost of repairing and maintaining the same in order, and the cost of raw material used in connection with the manufacture of binder twine in the Central Prison, giving the aggregate amounts for each year from the beginning of the said industry to date; the amounts annually paid as commissions for the sale of the product; the cost of packages, freight, salaries of extra officials and all other expenditures incurred in connection with or occasioned by the said manufacture. The annual receipts from sales of binder twine during the said period, and the estimated value of the machinery, plant, material and stock on hand when the said industry was transferred to its present managers. Presented to the Legislature 13th March, 1896. Mr. *Haycock.* (*Printed.*)

No. 68.. Return to an Order of the House, of the Twenty fifth day of March, 1895, for a Return shewing the municipal indebtedness of the various municipalities of the Province on the 31st December, 1894, under the following heads :—

1. Roads and bridges.
2. Railway bonuses.
3. Aid to manufactures by way of bonus.
4. Municipal waterworks.
5. Waterworks belonging to companies.
6. Gas and electricity.
7. High and Public Schools.
8. Sewers.
9. Other purposes.
10. Also shewing any debenture debt for local improvements, not above included. Presented to the Legislature 23rd March, 1896. Mr. *Gibson (Huron.)* (*Printed.*)

No. 69.. Return to an Order of the House, of the Fourth day of March, 1896, for a Return of copies of all correspondence, documents and writings between any Member of the Government, or between any person or persons and the Government, in connection with the recent charges made by James Massie, late Warden of the Central Prison, against certain of the officials of the Prison. Also, for copies of the Commission, or other appointment, and the instructions given to the Commissioners who investigated the charges. Also, for a copy of all evidence taken before the Commissioners at the investigation, and of the report made thereon by the Commissioners. Presented to the Legislature 23rd March, 1896. Mr. *Marter.* (*Not printed.*)

No. 70.. Return to an Order of the House, of the Twenty-sixth day of February, 1896, for a Return of copies of all correspondence between any official of the Corporation of the City of Hamilton and the Department of Crown Lands, or any officer thereof, relating to any question affecting the rights of the City of Hamilton, or any person or persons, to certain portions of Burlington Beach ; also, for a copy of any instructions given to S. H. Jones, Esquire, P. L. S., as to defining the limits of any holding either leased to the City of Hamilton, or sold to any individual occupant ; also, for a copy of plan of survey made by Mr. Jones ; also, for a copy of the original, as well as the subsidiary lease, granted to the City of Hamilton by the Department of Crown Lands. Presented to the Legislature 24th March, 1896. Mr. *Dickenson.* (*Not printed.*)

No. 71... Copy of an Order in Council, approved by His Honour the Lieutenant-Governor, the 26th day of March, A.D. 1896, approving of the accompanying Agreement between the Canada Publishing Company (Limited), Publishers, of the City of Toronto, and Her Majesty the Queen, represented by the Minister of Education for the Province, on behalf of the Educational Department of Ontario, respecting the publication of "The Public School Writing Course, Vertical System," comprising seven separate books, for use in the Public Schools of Ontario. Presented to the Legislature 26th March, 1896. (*Printed.*)

No. 72.. Copy of an Order in Council, approved by His Honour the Lieutenant-Governor, the 26th day of March, A.D. 1896, approving of the accompanying Agreement between The Copp Clark Company (Limited), Publishers of the City of Toronto, and Her Majesty the Queen, represented by the Minister of Education for the Province, on behalf of the Education Department of Ontario, respecting the publication of "The High School Physical Science, Part 2." Presented to the Legislature 26th March, 1896. (*Printed.*)

No. 73.. Copy of an Order in Council, approved by His Honour the Lieutenant-Governor, the 26th day of March, A.D. 1896, approving of the accompanying Agreement between The Copp, Clark Company (Limited), The Canada Publishing Company (Limited) and The W. J. Gage Company (Limited), Publishers, of the City of Toronto, and Her Majesty the Queen, represented by the Minister of Education for the Province, on behalf of the Education Department of Ontario, respecting the publication of Public School Readers, consisting of:—The First Reader, Parts 1 and 2; the Second Reader; the Third Reader; the Fourth Reader and the High School Reader. Presented to the Legislature 26th March, 1896. (*Printed.*)

No. 74.. Return to an Order of the House of the Sixth day of March, 1896, for a Return of Copies of all agreements entered into between the Government and Hazelwood & Whalen, and the Government and G. P. Cleaner, James Whalen and others, respecting the cutting of pulp wood, or other timber, in the territory north of Lake Superior, together with copies of all correspondence in connection with the same. Presented to the Legislature 26th March, 1896. Mr. *Matheson.* (*Not printed.*)

No. 75.. Return to an Order of the House of the First day of April, 1895, for a Return of copies of all advertisements calling for applications for professorships, associate professorships and lectureships in the University of Toronto and University College since the University Federation Act went into force; also, copies of all applications for such advertised positions and of the testimonials in support thereof and in the possession of any Department of the Government; also, copies of all correspondence relating to such vacancies between the Government and any person holding official positions in connection with the management of either of the above institutions. Presented to the Legislature 30th March, 1896. Mr. *Howland.* (*Not printed.*)

No. 76.. Return to an Order of the House of the Eleventh day of March, 1896, for a Return shewing the amounts paid to Warwick Bros. & Rutter for printing and binding for the years 1894 and 1895, respectively, in terms of the agreement of 1893. Presented to the Legislature 30th March, 1896. Mr. *Meacham.* (*Not printed.*)

No. 77.. Report of the Secretary and Registrar of the Province for the year 1895. Presented to the Legislature 31st March, 1896. (*Printed.*)

No. 78..	Report of the Librarian upon the state of the Library. Presented to the Legislature 1st April, 1896. (*Printed.*)
No. 79..	Papers relating to the application of the Senate of the University of Toronto to the Universities of Oxford and Cambridge for the grant of special affiliation privileges. Presented to the Legislature 7th April, 1896. (*Printed.*)
No 80..	Return to an Order of the House of the Sixteenth day of March, 1896, for a Return shewing how many of the children in each City and County, who passed the leaving examination in 1895, are now attending the High Schools. Presented to the Legislature 7th April, 1896. Mr. *Meacham.* (*Not printed.*)
No. 81..	Return to an Order of the House of the Twenty-fifth day of March, 1896, for a Return of copies of all applications and correspondence in favour of and relating to the appointment of William Murdock as Farmer, or Assistant Farmer, at the London Asylum. Presented to the Legislature 7th April, 1896. Mr. *Whitney.* (*Not printed.*)

ANNUAL REPORT

OF THE

BEE-KEEPERS' ASSOCIATION

FOR THE

PROVINCE OF ONTARIO

1895.

(PUBLISHED BY THE ONTARIO DEPARTMENT OF AGRICULTURE, TORONTO.)

PRINTED BY ORDER OF THE LEGISLATIVE ASSEMBLY.

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1896.

CONTENTS.

	PAGE.
LETTER OF TRANSMISSION	v.
LIST OF OFFICERS for 1896	vi.
LIST OF MEMBERS for 1896	vii.
FINANCIAL STATEMENT	viii.
SIXTEENTH ANNUAL MEETING	1
Is it advisable to increase the membership?	1
Resolutions	4
By-law amended	5
Address by Hon. A. S. Hardy	6
Report of Committee on Elections	7
Secretary's Report	7
Report of Directors	8
The President's Address	8
Receptacles for Honey	10
Efforts to secure an Act to prohibit the production and manufacture of spurious honey in Canada: S, T. PETTIT	11
Foul Brood, Inspector's Report: Wm McEvoy	14
Over-stocking localities	15
Review of papers of last annual meeting: ALLEN PRINGLE	17
Resolutions	25
Address by Mr. MCKNIGHT	26
Ontario Honey: R. F. HOLTERMANN	27
Some Experiments: R. L. Taylor	30
Breaking cluster	35
In Memoriam: Samuel Corneil	37
Directors' Meeting	38
Affiliated Societies' Report	38

ANNUAL REPORT

OF THE

ONTARIO BEE-KEEPERS' ASSOCIATION

1895.

To the Honorable the Minister of Agriculture:

SIR,—I have the honor to submit herewith the sixteenth Annual Report of the Ontario Bee-Keepers' Association, in which will be found the papers read at the Annual Meeting, recently held at Brantford, and a full report of the discussions thereon. The Report of the Foul Brood Inspector and the audited statement of the finances are submitted herewith.

Your obedient servant,

WM. COUSE,
Secretary.

STREETSVILLE, April, 1896.

OFFICERS FOR 1896.

President, - - - - - - - - - R. F. HOLTERMANN, Brantford.

Vice-President, - - - - - - - - - J. K. DARLING, Almonte.

2nd Vice-President, - - - - - - - W. J. BROWN, Chard.

Secretary, - - - - - - - - - - - WM. COUSE, Streetsville.

Treasurer, - - - - - - - - - - MARTIN EMIGH, Holbrook.

Directors:

Section 3.....M. B. HOLMES, Athens.

Section 4.....ALLEN PRINGLE, Selby.

Section 5.....J. W. SPARLING, Bowmanville.

Section 7.....A. PICKET, Nassagaweya.

Section 8.....JAS. ARMSTRONG, Cheapside.

Section 10.....A. E. SHERRINGTON, Walkerton.

Section 11.....F. A. GEMMELL, Stratford.

Section 12.....W. A. CHRYSLER, Chatham.

Section 13.....H. N. HUGHES, Barrie.

Auditors, - - - - - - - - - J. D. EVANS, Islington.
D. W. HEISE, Bethesda.

Foul Brood Inspector, - - - - - - WILLIAM MCEVOY, Woodburn.

Sub-Inspector of Foul Brood, - - - - - F. A. GEMMELL, Stratford.

Representative at Industrial Exhibition, Toronto, - R. H. SMITH, St. Thomas.

Representative at Western Fair, London, - - JOHN NEWTON, Thamesford.

LIST OF MEMBERS FOR 1896.

Name.	P. O. Address.	Name.	P. O. Address.
Armstrong, Jas.	Cheapside.	Lush, N.	Peterborough.
Aiken, William	St. Marys.	Lester, Jos.	Ferguson's Falls.
Brown, W. J.	Chard.	McLaughlin, Alex., Jr.	Cumberland.
Brown, Dennis	Chard.	McCulloch, Geo	Harwood.
Brenton, F.	Corbyville.	Morrison, R. A.	Inverary.
Baker, Lemon	Ringwood.	McCartney, R.	Rose Hall.
Best, J. H.	Balmoral.	McCrimmon, J. W	Laggan.
Birket, Thos	Brantford.	McKnight, R	Owen Sound.
Bayless, Wm.	Brantford.	Muir, William	Brantford.
Bygrave, W. C.	Brantford.	McEvoy, William	Woodburn.
Beer, C. R.	Brantford.	March, John	Bethesda.
Black, Alex	Sonya.	Mapes, L	Headford.
Buller, Miss Henrietta F.	Campbellford.	Moore, Geo. W.	Carholme.
Cummer, D. N	Florence.	Nolan, William	Holton, *via* St. Remi, Que.
Couse, Wm	Streetsville.	Newton, John	Thamesford.
Calder, J. W.	Lancaster.	Overholt, Israel	South Cayuga.
Chrysler, W. A.	Chatham.	Pearce, C. J.	Port Perry.
Calvert, Jno	Walsh.	Parker, Joseph	Peterborough.
Coverdale, R.	Canfield.	Picket, A	Nassagaweya.
Craig, Will J.	Brantford.	Post, C. W.	Trenton.
Cobbald, Paul A.	Haileybury.	Patterson, R. L	Lynden.
Couse, H.	Cookstown.	Pettit, S. T	Belmont.
Darling, S. F.	Perth Road.	Pierie, Jno	Drumquin.
Davison, J. F	Unionville.	Parker, James	Napperton.
Dickson, Alex	Lancaster.	Pringle, Allen	Selby.
Davis, Frank	Cainsville.	Robinson, Ernest	Hatchley.
Darling, J. K	Almonte.	Reaman, Josiah	Carville.
Dawson, A.	Mohawk.	Sloan, W. H	Milford.
Dickenson, Edward, Jr.	North Glanford.	Sheir, Julius	Vroomanton.
Evans, J. D	Islington.	Schultz, H. A.	Clontarf.
Edmundson, C.	Branttord.	Sly, Aaron	Port Hope.
Emigh, Martin	Holbrook.	Shaw, James	Kemble.
Engel, Conrad	Poole.	Switzer, J. F.	Streetsville.
Edmundson, A	Brantford.	Smith, R. H.	St. Thomas.
Eby, Daniel	Moorefield.	Sparling, J. W	Bowmanville.
French, Augustin	North Glanford.	Sherrington, A. E	Walkerton.
Farmer, Thos. W.	Ancaster.	Stewart, Alex	Canfield.
Frith, Jas. E.	Princeton.	Shaver, J	Cainsville.
Fyfe, A.	Harriston.	Shantz, Aaron	Haysville.
Freas, Herbert	St. Ann's.	Shaw, J. R.	Alexandria.
Gamble, Jas. P.	Cumberland.	Sager, Levi A	Deseronto.
Gemmell, F. A.	Stratford.	Salter, Jno. R.	Wingham.
Gale, H. E.	Ormstown, Que.	Stanford, G. H.	Hamilton.
Gould, E. L	Brantford.	Thomas, Joshua	Dracon.
Holmes, M. B.	Athens.	Tolton, Archie	Walkerton.
Holtermann, R. F	Brantford.	Taylor, R. J.	Brantford.
Holtermann, Mrs. P	Brantford.	Tombs, I	Alexandria.
Hall, J. B.	Woodstock.	Vansickle, Lafayette	Trinity.
Hughes, H. N.	Barrie.	Vernon, M. W.	Newmarket.
Harkley, Jno.	Walkerton.	Wood, Geo.	Erasmus.
Howell, J. R.	Brantford.	Whiteside, R. F.	Little Britain.
Heise, D. W	Bethesda.	Wells, W. C.	Phillipston.
Johnston, Thos. E.	North Gower.	Walton, W. S.	Scarboro' Junction.
Johnston, Geo. E.	Bracebridge.	Wood, Samuel	Nottawa.
Jeater, W. H.	Kincardine.	Wisner, Isaac G.	South Cayuga.
Kelly, Chas	Cathcart.	Willows, A. G.	Carlingford.
Kitchen, Cyrus	Brantford.	Watson, Chas	Brantford.
Lawer, R.	Woodrows.	Whetstone, Josiah	St. Marys.
Lepper, M	Picton.	Yeigh, Henry	Brantford.

FINANCIAL STATEMENT.

Abstract statement of receipts and expenditure of Ontario Bee-keepers' Association to January 15th, 1896:

Receipts.		Expenditure.	
Membership fees	$106 00	Balance due treasurer from last audit	$ 52 63
Affiliated society fees	55 00	Grant to affiliated societies	250 00
Legislative grants	650 00	" Industrial exhibition	25 00
Balance due treasurer	17 05	" Western Fair	10 00
		Directors' and officers' travelling expenses and board allowance	166 05
		Periodicals to members	108 55
		Travelling and other expenses, ex-committee	20 85
		Revising committee expenses	18 00
		Printing, postage and stationery	42 03
		Secretary's salary	50 00
		Treasurer's salary	25 00
		Expenses of committee pure honey legislation	33 95
		Cost of reporting last annual meeting	15 00
		Engrossing resolution for family of the late S. Corneil	5 00
		Auditors' expenses	4 00
		Miscellaneous	2 99
Total	$828 05	Total	$828 05
		Balance due treasurer	17 05

We, the undersigned auditors, have examined the accounts and vouchers, as per above account, and report all correct.

R. H. Smith,
J. E. Frith, } Auditors.

Brantford, January 16th, 1896.

R. F. HOLTERMANN, ESQ., BRANTFORD.

President of the Ontario Bee-Keepers' Association, 1896.

J. B. HALL, ESQ., WOODSTOCK.

President of the Ontario Bee-Keepers' Association, 1895.

ANNUAL MEETING

OF THE

ONTARIO BEE-KEEPERS' ASSOCIATION

The sixteenth annual meeting of the Ontario Bee-keepers' Association was held in Brantford, on January 15th, 16th and 17th, 1896. The proceedings were opened at 1.30 p.m. on Wednesday.

Mr. J. B. HALL, President of the Association, took the chair, and after calling the meeting to order, stated, that as the Secretary had not yet arrived, any member who wished to ask a question might do so.

IS IT ADVISABLE TO INCREASE THE MEMBERSHIP?

Mr. J. D. EVANS, Islington: I would like to know if it is advisable for the Bee-keepers' Association to encourage an increase in the number of bee-keepers. I notice in bee journals that a large quantity of honey is being wasted, and I want to know if we as bee-keepers who desire to make something out of the business should desire to increase the number in the business.

The CHAIRMAN: What do you think about it yourself?

Mr. EVANS: I do not think so. I do not think the doctors and lawyers go around seeking to get more in their profession. It makes me red hot when I see this. I think it is simply committing suicide, and therefore think it is a mistake on our part to encourage other people to leave any business and take up bee-keeping.

A MEMBER: We make a mistake in not giving the difficulties of the calling. As it is we are all red hot about our business; but we don't tell the public about the rocks and shoals, and therefore they lose their money.

A MEMBER: While it may not be advisable or desirable to encourage the masses to go into bee-keeping; I want to know how it is to be avoided. The reports of our annual meeting get into the public press, and the people read the papers.

A MEMBER: If the press will give an accurate report of the crop for the last two seasons, it will have a tendency to stop people from going into bee-keeping.

Mr. ALLEN PRINGLE: There is a difference between carrying on our conventions and making a special effort to induce all and sundry to engage in the business of bee-keeping. I do not think Mr. Evans meant to say that we ought to relax our legitimate efforts, but that we should not be putting forth special efforts to get everybody to go into bee-keeping. It would be hard to answer his question from a business standpoint. In England however, they go into it a great deal more strongly than we do. They endeavor to induce people to go into the business more extensively. As for myself, I have always given my neighbor or any man who came to me all the information I could. I have not gone out in the by places to teach bee culture, still I am inclined to agree with Mr. Evans that it is not just wise to try and induce everybody to go into the business.

The CHAIRMAN: I think in England it is calculated to induce and encourage the cottagers to go into bee-keeping, so as to assist them in eking out an existence. Happily in this country of ours we are better off.

A MEMBER: This reminds me of a member of this Association, who told me that he never allowed anyone into his bee yard unless they paid him. I trust it will not go to the public that this Association has decided to hide its light under a bushel. This is the purpose for which we receive public aid. We are getting a grant for the purpose of developing the honey industry, and I do trust that we will not accept that grant and use it and let the world believe that we are endeavoring to conceal knowledge from them. It is to propagate that knowledge that we are getting that grant. The country is also paying men year after year to go round and attend "Farmers' Institutes" and speak on bee-keeping in order to enlighten the public on the theory and practice of bee-keeping, and I do trust that no such expression of opinion will go to the public as has been made here to-day.

Mr. S. T. PETTIT: There are just two lines of action before us; the one is to be exclusive to ourselves, and selfish, getting all the knowledge we can and concealing it; and the other is that this Association means to develop the great bee industry, and for that purpose we ask the govenment aid, and we ask an increase of grant, and that is the plea that is put forward and if we are going to go back from that we must say to Mr. Dryden we do not want another dollar. If we receive the money we must push bee-keeping. My friend, Mr. Evans, is laboring under a mistake, when he supposes that an increase of bee culture is going to hurt him or me. The more honey we have the better it sells. If we have not an article to sell we cannot open a market for it, and if we open a market in a foreign country we must have the article to supply that market or we will lose it. Now I hold it is the right thing for this Association to encourage bee-keepers so that we will have hundreds of tons to put on the market, and we are going to get a market for it. There is already a market opened in England, and if we push it and keep our reputation right, there is no trouble in disposing of our honey at paying prices. There are three things necessary to keep the market. First, the article, then the reputation and then the quality. We have the article, we have the reputation, we have the quality and we want to go on and produce that article, and let the people of the world know that we have got it. It is a great mistake to huddle a lot of bee-keepers together in one neighborhood where a man is settled down and has his bee yard. We ought to cultivate the sentiment that if another man wants to start, he should go a reasonable distance, and then there is no clashing.

Mr. R. F. HOLTERMANN: As I have been out at the Institute meetings for some years and have lectured to a class in the Ontario Agricultural College, I do not think it is out of place for the Association to know just the exact stand I have taken on this question. I think the straightforward and honest principles are the correct thing. I think in the past the idea has been circulated to a great extent, that it required neither time, experience nor intelligence to keep bees. A good many have been under the impression that anybody could buy a few hives of bees and get the honey from them. Where I have addressed Institute meetings I have always said that bee-keeping did require experience and time, and unless a man was prepared to give time and get experience that he had better keep out of bee-keeping. I think if we as members of this Association go out with that idea and circulate it, it will keep the Province from losing money, because men have lost money through keeping bees. One of the strong points of bee-keeping that I have stated at these meetings has been, that it took nothing from the soil and that it displaces no other crop on the farm, and it might be that girls and boys who might otherwise have to leave the farm, through bee-keeping might be engaged in profitable work on the farm. My idea has been to develop bee-keeping in that way on good solid lines, and it is desirable also to do what we can to develop our home and the foreign market. I do not think there is a man here present, who will not admit that our home and foreign market can be developed. If bee-keepers send poor

honey on the market and people get hold of that, those people are not going to buy honey again; but if we encourage the production of a pure article we are going to do the industry and the Province of Ontario a great deal of good.

Mr. Evans: I had no idea of advising that the proceedings of this convention should be suppressed, but I am still of the opinion that we should make no special effort to increase bee-keepers. I think that in Ontario we can produce more honey than we can sell in ordinary years, and I think attempting to send it to Europe has been a failure. I have seen the best honey sold in Toronto for six cents a pound. As to receiving a grant from the Ontario Government, we find the legal profession and the medical profession receive large grants, and the colleges and the universities are maintained by the country largely, to teach these men, and yet we find these professions use every effort in their power to restrict the number of men that come into their profession, and if they could so succeed they would not allow a store keeper to sell an ounce of salts, and a lawyer would not allow an ordinary man to draw a will. I do not think it is a good thing either for the Farmers' Institutes or the Agricultural College to increase the number of bee-keepers. I think if you send men around to lecture you will get so many people interested in bee-keeping that we will not be able to sell our honey.

J. E. Frith: I have been listening to these remarks with regard to the production of honey, and the proposer of the question, Mr. Evans seems to have based his question on the fact that getting everybody to go into bee-keeping and raising a few pounds of honey, and perhaps launching that on the market will demoralize it. I think there is another feature of the question: Can we produce or over produce a good quality of honey, and can we have too many qualified progressive bee-keepers? Take the dairy industry; butter brings just as much to-day as it did twenty-five years ago, that is taking it for a number of years. Take the cheese industry; very little was produced in this country twenty-five years ago, and it didn't bring any better price than it does to-day, yet the production of cheese has increased 100 per cent. in this country. It seems to me the gentlemen have been mistaken in their remarks, and there is room for qualified bee-keepers all over the country. My experience leads me to this conclusion, that if we have qualified bee-keepers just the same as in any other industry, it will increase our market rather than over do it. I have been up in the North West Territory three seasons, and I have taken some pains to examine the quality of honey sent from this country, and I think that just about eighty-five per cent. of all the honey that has been sent up to Manitoba is not fit to leave this country. It has been produced by unquailfied bee-keepers, and I might say just here that Manitoba is going to be a market for our honey for a long time to come. Now, I think the work of this Association is to raise the standard of our bee-keepers as a profession. Take any class of industry or any dapartment of agriculture where men become qualified for that department, and you will find that department increases and becomes very valuable. I do not think it will hurt me if I have good men in every direction all round my section of the country. I would not like to go into the by-ways and highways and persuade every man to go into the business. I think we cannot press the fact too much that we must have good men.

Mr. Holtermann: In regard to the foreign market, there are several members present who have sent their honey home and secured better prices than in this country.

Mr. Heise: I think nature itself will attend to this matter, possibly better than we could. Every two or three years we have a poor honey season followed by a severe winter, and all the slip-shod bee-keepers find themselves without any bees in the spring, and it is only practical bee-keepers who remain in the field. We ought to know something about our man before we advise him to go into bee-keeping.

The President: I rise to emphasize what Mr. Holtermann has said. We ship honey to Britain and it brings us better prices than we get at home, for one-tenth part of the trouble, for they look upon it as a choice article and write back "have you any more?" "Cannot you supply us with some more like the last" and we have to say "No." We want bee-keepers in Ontario, but we do not want men who buy bees and put them down and let them work for nothing and take the honey when they feel inclined. This Associa-

tion receives from the Government so much money each year to improve ourselves, and give true information to the public, and if we give true information we shall never have a surplus of bee-keepers, for those people who are so anxious to go into the business, if there is anything to do soon get out. I go thirty years back, when our cheese was worth five cents a pound, and very poor stuff and very little of it made. I am up in the country where it was sold forty years ago by Mrs. Rannie; she used to get a good price for her cheese simply because she knew how to make it. It is the same with the bee-keepers; we cannot have too many bee-keepers in Ontario. If we get the right kind we cannot have enough honey to supply the demand, I mean now the foreign demand.

A MEMBER: What kind of honey?

The PRESIDENT: Only first-class honey, produced by first class bee-keepers; not those who cannot succeed in anything else.

Mr. MCKNIGHT: Might I ask if this is not the man of straw that we have set up, and we are voluntarily throwing him down? Is it a fact there are such men in the country?

The PRESIDENT: It is a fact. Your executive was asked to recommend men who could go around and talk bees at the Farmers' Institutes. We said it was a difficult thing to do, as some of our men were good talkers; they could entertain an audience for two hours, and at the end of that time they would not know much about bee-keeping. The practical bee-keepers we had were not good talkers.

Mr. MCKNIGHT: I think it is due this Association that if there are any such men in it, and if they have been pointed out as eligible for their position, we ought to know it.

Mr. M. B. HOLMES, Athens: People come to me to buy bees, and I say here are the bees and this is my price, and if you are not prepared to give them the time and study that is required, you had better let the specialist attend to it and you try some other line.

Mr. PRINGLE: You made the statement that we cannot have too many expert bee-keepers in this country. Now we could, just as soon as the expert bee-keepers get too close together.

The CHAIRMAN: This is a big country.

Mr. PRINGLE: There is a choice Province, and that is Ontario, and here it is possible to get too many expert bee-keepers, because just as soon as they get more than the locality can supply they are getting too many.

RESOLUTIONS.

Moved by Mr. MCKNIGHT, seconded by Mr. CHRYSLER, that the minutes of the last meeting be taken as read. Carried.

Moved by Mr. HOLTERMANN, seconded by Mr. SHERRINGTON, that by-law No. 15 be amended so as to read December instead of January. Carried.

Moved by Mr. MCKNIGHT, seconded by Mr. SPARLING, that by-law No. 6 be rescinded. Carried.

Moved by Mr. HOLTERMANN, seconded by Mr. MCKNIGHT, that by-law No. 3 be rescinded. Carried.

Moved by Mr. HOLTERMANN, seconded by Mr. BROWN that by-law No. 19 be amended. Carried.

Moved by Mr. HEISE, seconded by Mr. HOLTERMANN, that a committee of three be appointed to draw up an amendment to by-law No. 19. Carried

Moved by Mr. McKnight, seconded by Mr. Pettit, that the Secretary be instructed to write to the Secretary of Agriculture at Washington for 250 copies of Bulletin No. 1 on Bees and Bee-keeping. Carried.

Moved by Mr. Pettit, seconded by Mr. Darling, that a committee of five be appointed by the President to draw a by-law to provide for the election of directors and to reorganize districts. Carried.

The meeting then adjourned until the evening.

FIRST DAY—EVENING SESSION.

The President took the chair at 7.30 p.m.

BY-LAW AMENDED.

Committee appointed at the afternoon session to draw up amendment to by-law No 19 reported as follows: The committee unanimously recommend and submit as a solution in regard to by-law 19, that said by-law be amended as follows:

Each affiliated Association shall be entitled to the privilege of two delegates to the meetings of this Association; said delegates, if not already members of the Ontario Bee-keepers' Association, shall have their membership fee paid out of the $5 affiliation fee paid by the affiliated society, and be entitled to all the rights and privileges of members of the Association, the year to terminate when the next affiliation fee becomes due.

[Signed] Allen Pringle,
R. F. Holtermann,
J. E. Frith.

On motion the report was adopted.

Mr. Evans: Should not the public be made acquainted with the fact that a bee-keeper has foul brood?

Mr. Calvert: Mr. A. I. Root published in his own paper the fact that he had foul brood, and it did not harm his business in any way.

Mr. McKnight: Does it not do the honey man more harm to conceal the fact that certain parties have foul brood, than it would to publish it? Does it not leave it on the mind of the consumer that every man's honey is affected by foul brood? I do not think that our inspector should publish to the world that any man's apiary is rotten with foul brood. I say that statement has the effect of making people suspicious of buying honey, and I would like to see our inspector put that word under his feet and keep it there as long as he lives.

Mr. McEvoy: He has got me in a tight place. I did not see it in that way; he is right. I should not use the word rotten, because a person that did not understand bees might be misled.

Mr. Pringle: I think the word is too strong. I think I suggested that to the inspector during the time he was under my direction when I was President. This is a delicate question, and there is only one solution to it. There is no doubt the principle Mr. Knight sets out is strong, but it is founded upon a wrong impression. If you publish the names of those who have foul brood it would be in your annual report, and at that time the publication would do no good and a great deal of harm, because the very man who would be published as having foul brood would have got rid of it by that time. Those who are headstrong and obstinate, and will not follow the inspector's instructions, and who do not care whether their neighbors are endangered or not, should have their names published to the world. If they have shown neglect and obstinacy, the public ought to know these men.

Mr. EVANS: The names should be published in the *Bee Journal*, and when the apiaries are cured there should be a certificate from the inspector that they are cured. The general public do not read bee journals. I am continually buying bees, and I ought to know by some means where I can safely buy. It is not my idea that the names should be published in the report, but I think as soon as the apiary is found to be diseased it should be published in the *Bee Journal*.

Mr. HOLTERMANN: I do not think it would be advisable to publish the names in the journals.

Mr. FRITH: I passed through the foul brood scourge, and I made it public. I had a great number of orders from all over Canada and some foreign countries for queens. The man from whom I got the foul brood had it for two years within a mile and a half of my apiary; he passed my door every day and never let me know he had the disease, and when I discovered it by accident I cornered him up. For the good of the Association, I think it would be unwise to publish the names. People are buying queens everywhere. We took the matter up in our local Association, and recommended every man who was buying queens not to buy from any apiaries unless he had the assurance that there was no foul brood there. For the good of the fraternity I would not like to have any man's name published.

The CHAIRMAN: The Hon. Mr. Hardy was to occupy the chair to-morrow evening, but for some cause or other he cannot be here to-morrow evening, and as he is here now we would like a few words from him.

ADDRESS BY HON. A. S. HARDY.

Hon. Mr. HARDY was warmly received. He said: You see how eager I was to take the chair by getting here twenty-four hours before time. I stopped over on my way from the north to-day, thinking it was the evening of Wednesday. I do not know how I made the mistake. Seeing you were in session I came over, and as it will be difficult for me to return to-morrow, I take this opportunity of being here to welcome you to our good city. I am pleased and delighted to see so many men who came expressly to take part in the discussion relating to this ever growing and agreeable institution connected with bees and honey. I trust your meeting may be profitable to yourselves, and that the time spent here may be pleasant and agreeable, and that you may go away with pleasant recollections of our good town. When passing through Switzerland some few years ago I was surprised to find at breakfast Swiss honey, and it was looked upon as an article of diet, to which we took most kindly; it was always in use. I am glad to find that honey is coming more and more into general use in this Province. I have no doubt that the industry established here to make apiary appliances has done a good deal to popularize the work which you yourselves are doing, while it has given to the firm I believe a name that is very complimentary to them, and is an advantage to our city and the Province at large. I understand that their trade is also extending to the United States. I do not fail to remember the magnificent display you made at the Industrial Exhibition last year. It was one that caused a great deal of comment in private conversation and in the press. It was very creditable to your organization, and showed your institution was a live institution. I also remarked the marked superiority of the display at Chicago, and I believe you had an exhibit at the Colonial Exhibition, and we have taken the trouble to have samples sent over to the Imperial Institute. We have also voted enough money to pay for your inspector's salary. And we have also paid for a course of lectures at the Agricultural College from our esteemed and learned citizen, Mr. Holtermann. These are steps in the right direction. You get a grant of $500. I suppose that is all that you desire. If it is not, you can trust to Mr. Holtermann and your President and other officers to make known your many wants, and we will at all times hold an open ear to real

wants in connection with any of these institutions in the form of agriculture, and do all we can to promote their well-being. I shall not in my general talk detain you from your more interesting discussions of the methods employed which lead to the prosperity and progress of your creditable and most interesting industry. (Applause.)

Mr. J. E. FRITH: We had a very able speech to-night from the Hon. Mr. Hardy. We heard these few words upon the encouragement of the new industry. It is fast becoming established as one of the staple industries of this country. We have received a few words of encouragement from one outside of our profession, and I think I voice the sentiments of the members present when I move a vote of thanks to the Hon. Mr. Hardy.

Mr. HOLTERMANN: It affords me a great deal of pleasure in getting up at the present time to second the motion. I may say that although the Hon. Mr. Hardy is not the Minister of Agriculture, yet the bee-keepers owe him a great deal. He has always been ready to assist the bee-keepers in every reasonable way. Last year when the committee was sent down to Toronto to interview the Minister of Agriculture in connection with an increase of grant, we had the warm co-operation of the Hon. Mr. Hardy, and I take a great deal of pleasure in seconding the motion.

The PRESIDENT: I have great pleasure in tendering to the Hon. Mr. Hardy the thanks of this Association for his kind remarks this evening.

REPORT OF COMMITTEE ON ELECTIONS.

Mr. PETTIT: A committee was appointed to get over the difficulty of meeting the provisions of the new Act which confined us to nine directors instead of thirteen. Our Secretary, Mr. Holmes, is prepared to read the report.

Mr. HOLMES: Your committee appointed to map out a plan for the election of officers for this Association would beg to report as follows: We would recommend that for the present year this Association elect a President, two Vice-Presidents, and nine Directors, as follows, one of the above officers from each of the following districts, viz., 1, 2, 3, 4, 5, 7, 8, 9, 10, 11, and 13, and that the Board of Directors so elected should name a Secretary from district No. 6. All of which is respectfully submitted.

I beg to move the adoption of the report.

Mr. PETTIT: I have great pleasure in seconding the motion.

The report was adopted.

SECRETARY'S REPORT.

RECEIPTS.

Grants from eleven affiliated societies, $5 each	$55 00
Membership fees, Ontario Bee-keepers' Association	106 00
	$161 00

DISBURSEMENTS.

March 8, 1895—Martin Emigh, Treasurer, cash	$56 00
Sept. 5, 1895— " " "	36 50
Jan. 14, 1895— " " "	69 50
	$161 00

REPORT OF DIRECTORS.

To the Members of the Ontario Bee-keepers' Association:

GENTLEMEN,—Your Directors, in presenting their Twelfth Annual Report since incorporation, are pleased to report that the Association is in a prosperous condition, and that there continues to be a lively interest taken in all matters in connection with the Association.

The total receipts for the year just closed were $890, derived from the following sources: For membership fees, $175; from affiliation fees of thirteen societies, $65; and Government grant, $650.

The total disbursements, which are itemized as in the report of the Treasurer, show a small balance due the Treasurer.

It is with sorrow that we have to report the death of one of our members, the late F. A. Rose, who was a faithful member of our board.

We regret that we have to report the lightest crop of honey during the existence of the Association.

The members have each been furnished with the *Canadian Bee Journal* as a bonus or a *quid pro quo* for their membership fees.

During the year there has been a special meeting of the Association in connection with the North American Association in Toronto last September. Also board meetings at the beginning and ending of the year, and meeting of the Executive in Toronto in September.

All of which is respectfully submitted.

J. B. HALL,
President.

W. COUSE,
Secretary.

Moved by R. MCKNIGHT and seconded by WM. MCEVOY, that the report of Directors be adopted and engrossed in the minutes. Carried.

THE PRESIDENT'S ADDRESS.

The PRESIDENT then delivered the following address:

BROTHER AND SISTER APIARISTS,—It rejoices my heart that so many of us are spared to meet in convention, and that so large a number are here, notwithstanding the discouragement of the past season. Many of us having had a total failure in honey, had to feed our stocks to carry them through the winter. But truly the apiarist is a hopeful being, and most of us are nursing our pets with the hope of a good harvest in the summer of 1896. I trust that our hopes may be realized.

I am sure that you with me, feel and regret the loss and death and miss the kindly face of our esteemed friend the late F. A. Rose, of Balmoral, who has met with us so often at our annual meetings.

I would suggest for your consideration that By-law No. 1 be amended by adding thereto: "That those opposed to the interests of our Association be rejected or expelled by a majority vote of the meeting or members." I think you will see the need of this change in said by-law, as the Association has no means of refusing membership to those

who may oppose its best interests, through the public press or otherwise, and who, as members of the Association, use said membership to give force to the statements the reverse of the unanimous vote of the Association.

Also that some stated time be made with the stenographer for the delivery of the written report, as in the past the Revising Committee No. 1 has been very much troubled by delay; also that some practical apiarist be present when the report is being rewritten to give the stenographer his assistance where he has caught any sound incorrectly.

I also think you will do well by choosing at a full meeting the Revising Committee. I feel that as bee-keepers and as an Association we are greatly indebted to our representatives in the Legislature of Ontario for their generous and kindly feeling to the apiarists of Ontario, and especially for giving the Province an efficient foulbrood inspector, whose services are put at our command.

I am also pleased that the bee-keepers throughout the Province, excepting one or two would-be scientists, have cheerfully, willingly, and thoroughly followed the inspector's instructions, and made a clean job by so doing, have clean and healthy apiaries and will be in a position to reap a bountiful harvest, if the Ruler of all causes the nectar to secrete in the flowers.

I am pleased that so many in Europe have been seeking our produce, and I hope that in the year 1896 we may have a full crop and that the demand for it may be great. I find that our honey gives satisfaction to our British friends, and I urge that all of us put up and sell only first-class goods, and by so doing the demand for our product will increase. I would urge you to push the pure honey legislation, for, if obtained, it will give us a position as honey producers second to none in the world, for then our goods would have the guarantee of the Government of Canada as regards its purity, and that will go far with the British consumer. When permitted put your name and address on each package.

As regards the awards made on the Ontario honey exhibited at the World's Fair at Chicago, which surpassed and left far behind in the race all competitors. I suppose we must be content with the Monroe Doctrine as applied to honey, and not dare to ask for the awards, because we cheerfully submit to the Government that flies the Union Jack, and are proud of our allegiance.

An item that may be of interest to some present, and the Executive Committee submit it for your consideration, is in connection with the meeting of the North American Association, held in Toronto. Your Secretary and President were urged to call a meeting of the Board of Directors to meet said North American Association and welcome its members to the Province of Ontario. To have complied with these wishes would have cost $175, and this expense the Executive decided as not advisable. So we called together for that and other purposes the Executive Committee at a cost of $20.85, thus saving the Society $154.

I am pleased that our Secretary is able to report an increase of county or district societies affiliating with the Ontario Association, thus showing that the interest in apiculture is increasing. And allow me to repeat that I hope your labors of 1896 will be awarded by an abundance of choice honey, to gladden your hearts and supply the demand of the honey-loving public.

Moved by Mr. Best, seconded by Mr. Chrysler, that the President's address be accepted. In making the motion Mr. Best said: I might say that I had much pleasure in noticing that the President has made kindly mention of the late Mr. Rose. I can assure you we have lost not only a good man in the bee business, but in any other business. He has shown to the public that he was a man in every respect. As regards the other part of the address, I am sure it is a credit to our President. Carried.

Mr. McKnight raised a question of privilege, and complained that he had been unjustly attacked in the *Canadian Bee Journal*, and spoke at great length on the matter, and was replied to by Mr. Holtermann and Mr. Pettit.

A letter was read from Rev. Mr. Clarke objecting to the action of the Foul Brood Inspector.

Moved by Mr. EVANS, seconded by W. J. BROWN, that this Association approves of the action of the Foul Brood Inspector in his treatment of the bees of the Rev. Mr. Clarke, and that a copy of this resolution be sent to Mr. Clarke. Carried.

RECEPTACLES FOR HONEY.

Mr. LOUIS MAPES: What kind of receptacles do the members of this Association retail their honey in. We have in York county a honey pail, and we sell it by the gross weight; in that way we sell the pail at the same time.

Mr. ARMSTRONG: As far as I am concerned, I use a package and charge extra for the pails. I also use twenty-pound pails. I find that twenty pound pails are the best, because they can use them after the honey is out of them.

Mr. PRINGLE: I am not in favor of ten-pound pails gross; I am in favor of ten pound pails net.

Mr. HALL: I must say that I never sold ten pounds gross. I find it a great inconvenience to get ten cents for the package. You say to them that you will give the ten cents back, but the customer says: "We don't want to lay out our ten cents. At the Exhibition in Toronto I noticed an old lady and gentleman and a young lady walking through asking a certain question. Our turn came last, and the question asked was: "How do you sell honey?" "Ten cents a pound." "How much is in that vessel?" "Five pounds." It was taken down and done up for them, and fifty cents laid down for it. "But the vessel is ten cents." "You said five pounds, ten cents a pound?" "Yes." "I have no use for the vessel." "Well then we won't charge you for it." And she reached for the honey, and the boy took the top off the tin, and said: "Will you take it in your pocket or in your basket?"

Mr. PRINGLE: I aim to make the ten-pound tins to hold ten pounds of honey.

Mr. HOLTERMANN: I think we have to be guided in part by the way they do with other products. If the buyer understands it is ten pounds, can and all, there is nothing unfair about it, but there is the difficulty of the buyer being mislead.

Mr. HOLMES: I would be inclined to favor the net weight; that is the plan I follow. I use quite a number of twenty-five pound packages, and I invariably tell the customer that the price of the package is twenty-five cents, and that there are twenty-five pounds, and the customer usually pays cheerfully for the package.

LOUIS MAPES: I fail to see the difference, whether you tell a man he pays for it or whether you do not. I have been trying to work up a home market for my honey, and I have been out a little with a horse and waggon. I say ten cents a pound, and I have five-pound pails and ten-pound pails. If they ask if the pail is theirs, I tell them you pay for the pail when you pay for the honey. I weigh pails and all, and I find it more satisfactory. It is hard to get that extra ten cents.

Mr. COUSE: I have had considerable experience along this line. As a rule, when I get my tins back they are not worth half what I gave for them. Now I am gradually getting into the practice of marking the whole thing gross weight, and I do not fail to tell this to whom I am selling. I shipped a few crates of honey a few days ago to one of the best groceries and marked it five pounds gross. I do not want to deceive the customer at all. I get paid for my tins now, and I don't want to get them back.

Mr. JOHN NEWTON: As far as I am concerned, I think both methods are right. For my part, I have tried both, and for the last two years I have put some up in both ways, and I have some customers that won't pay for the pails and do not want them. I tell them it is ten pounds of honey and the pail is ten cents extra. If they just want the even money they get nine pounds of honey and pay for the tin. I tell them we do not get these pails for nothing. I do not think it is right to say here is ten pounds of honey, and then they find out it is only nine pounds. As far as my experience goes, they are willing to buy nine pounds of honey and pay for the can. I think it is just a matter of how we explain it to our customers.

Mr. CHRYSLER (Chatham): I have used both kinds. As for the ten pounds in pails, I find the same trouble as Mr. Newton. You are getting back twenty-five per cent. of the pails you send out. You might tell them the price is $1.10, and they will say "I do not want the pail." If they are well acquainted with you, they will take the pail for one dollar and say they will return it. Ninety per cent. of them do not return it. I have used the ten-pound gross pail, and explained to them that it was ten pounds gross, and the pail weighs about three-quarters of a pound, and I find that the most satisfactory way.

Mr. NEWTON: I had considerable success with the twenty-pound pails. They do not object to paying for the twenty-pound pails.

Mr. HEISE: When I retail I sell a five-pound pail or ten-pound pail gross weight, and when I wholesale I sell so many pounds net. Those customers who say they have no use for the package, I say to them, if you return it in good condition I will take it back and allow ten cents for it; and when they do not return it in good shape, I say I have no more use for it.

EFFORTS TO SECURE AN ACT TO PROHIBIT THE PRODUCTION AND MANUFACTURE OF SPURIOUS HONEY IN CANADA.

Mr. S. T. PETTIT read the following paper:

It will be remembered that soon after the session of Parliament for 1895 closed, I reported through *The Canadian Bee Journal* that the Bill had not been reached. Now, if there is any consolation in it I will state that there were over thirty other Bills in that session that had shared a like fate. But I believe the failure in our case came about largely through the fact that we have in our Association an opposition of two members; a small opposition but a very vigorous one. When it was announced that the House of Commons would meet in April, 1895, I at once wrote T. S. Sproule, M P., to introduce our Bill at the earliest possible moment, so that it would be sure to get through. Mr. Sproule answered that he would do so, and that I had better come down to Ottawa about the second week of the session, for the Bill would likely get its second reading about that time. So in compliance I went down.

During the year 1894, as well as previous to that, there was an undercurrent of opposition that did not come to the surface very distinctly, but it did harm all the same. But during the session of 1895, beside the undercurrent, there was open and virulent opposition waged in the press against our Bill. From the many misleading statements set forth in the press I select the following, viz.:

That "the nectar of flowers and cane sugar are one and the same." That "it has been accidentally discovered that the best granulated sugar is converted by the bees into a honey which cannot be distinguished by experts from the best grades of honey." That "no sooner was this discovery made public than a hue and cry arose among ignorant, unscientific, narrow-minded bee-keepers against what they alleged to be threatened adulteration." "That this law is sought for selfish ends, it is wanted as a weapon and a menace to keep an upstart clique in power." "That unfortunately our Parliaments have too often passed Acts in the interests of monopolists and combines, rather than for the good of the general public; the anti-sugar honey Bill is one of this kind." Now, you can all understand how these untruthful and damaging statements militate against the success of our Bill. I may state right here that I replied through the press, in order to disabuse the public mind of the spurious and misleading statements held forth by our opponents.

Again an effort was made to work up a prejudice against our Bill by stating in a public way that it legalizes honey dew; when such is not the case, for it does not in any way seek to affect the legal status of honey dew. Again, one of our opponents sets forth that fifty dollars is the maximum fine in the Adulteration Act for manufacturing or sell-

ing food mixed with that which is not injurious to the public health. This statement is not in accord with fact, for the maximum fine for the former offence is one hundred dollars. It would seem that that statement is made in order to prejudically affect our Bill. I mention these these things that all may understand the difficulties to be overcome.

While at the capital last April I again had the honor of placing our claims before the Premier and nearly all the ministers and many members of the House of Commons, and also before some of our senators, and I came away with the feeling that our Bill would become law if the members should be privileged with an opportunity to vote upon it, and I am seized with the same conviction still.

And now I do recommend that the Association continue to press its claims for the legal protection of our struggling industry, and the reputation Canada demands.

Mr. McKnight: I opposed the Bill because I considered it needless, and secondly, because it is unwise to spend money on a needless thing. My opinion is that if you have not a sugar-honey Bill it is Mr. Pettit's fault.

The Chairman: Call it a pure honey Bill.

Mr. McKnight: No, I won't call it a pure honey Bill. Here are the words of the Act itself: "What the bees gather from natural sources." We could have had the Bill if it had not been for the opposition of Mr. Pettit himself. Here is an extract from a letter he wrote Dr. Sproule. In this letter he urges Dr. Sproule to oppose Mr. Wood's Bill. He is endeavoring to show Dr. Sproule that Mr. Wood's Bill is not a suitable Bill, and not what Mr. Pettit wanted.

Mr. Pettit: Although the Hon. Mr. Wood's intentions were good, his Bill could not possibly be of any use, but rather an injury.

Mr. McKnight: I look upon the Bill now as I did before, just like a chip in porridge. I believe we have already all the protection that Bill affords. The cost of the delegations must be somewhere over $300. I believe this Association was mislead last year, and because of its being mislead this additional amount was taken out of the treasury. If the honest truth had been stated to the Association last year I firmly believe no delegates would have been sent; the work would have been done without incurring any expense.

Mr. Pettit: I say Mr. Wood's Bill would certainly have passed if I had not objected to it, and I did object to it, and because I objected to it it did not pass. The provision in Mr. Wood's Bill was that it should be marked on the label what it was; you could go right on producing sugar honey if you wanted to. If that is the kind of Bill you wanted I made a mistake in opposing it, but my opinion is that if we get a Bill at all we must have one that will give us proper protection.

The meeting then adjourned until the following morning.

SECOND DAY—MORNING SESSION.

The convention re-opened at nine o'clock.

Mr. Brown: In my neighborhood I supply honey for the dealers. I had one grocery store that I had been in the habit of supplying honey to, and I did not fill my order for a few days, and when I came back I found the shelves decorated with honey of this description (showing bottle of honey labelled "Pure Canadian Honey"). I said what are you selling honey at, and he said 25 cents for two, or 15 cents for one. He partly refused to buy any from me, but afterwards agreed to take some of mine. Now, it is open for everyone in the audience to see the label on that package. It is labelled pure

Canadian honey. I purchased two of these, and sent one to be analyzed by the public chemist at Ottawa, and here is his reply. The package I sent to Ottawa was sent with an unbroken seal, and here is the report of the public chemist :

Canada analysis of food, No. 4397.

Office at Ottawa, 2nd Jan., 1896.

I, T. MacFarlane, chief analyist, duly appointed and acting in and for the Inland Revenue Department, hereby certify that I received from Mr. Frank T. Shutt, chemist for the Experimental Farm, on the 18th day of December, 1895, by hand, a sample of honey for analysis with label unbroken, and I have caused the same to be analyzed, and declare it to contain as follows:

Water	26.30
Substance soluble in alcohol, including 53.23 reducing sugar	67.12
Dextrine, etc., insoluble in alcohol	6.58
	100.00

Optical Examination. It possesses right-handed rotation to a very considerable degree, both before and after inversion. I am of the opinion that it contains an adulteration of glucose, and more than an average amount of water. I am also of the opinion that it is not injurious to the health of the person consuming it.

Fee, $5, as witnesses my hand.

THOMAS MACFARLANE,
Chief Analyst.

Mr. PETTIT : Our Bill is so worded that it covers that stuff, and if we get our Bill through, a man will be liable to a $400 fine, and that will stop people putting such stuff on the market.

Mr. BROWN : This is crowding good honey out of the market. It is injuring good Canadian honey. It is labelled Canadian honey and there is no honey in it. The fine at present is too low. This adulteration is not made within our Province. It is imported into the Province, and we want to keep it out. We want to have a severer fine and a clearer way of getting at the truth. I consider that if we want to maintain the reputation of our honey in this Province we will have to get something better than the Adulteration of Foods Act, because there is nothing in that to protect us to any extent. I say, therefore, that it would be the duty of this Association to prosecute a case of this kind, because it comes too hard on an individual to do it. Our grocery stores are glutted with this kind of stuff. I ask this Association for assistance to stamp out this adulteration; I want to drive this stuff out of the country.

Mr. HALL : The Pure Honey Bill will cover that case. The Adulteration of Foods Act is not sufficient to deter these rascals from doing this act. They can afford to pay five dollars every two or three days for selling such stuff as that. I think this is a very good proof that we need the Bill that we have been discussing in the past.

Mr. PETTIT : I have a letter from a man in Nova Scotia, Mr. Bell, and in it he says : "We are in sympathy with you in reference to your work in trying to get a law passed, prohibiting the manufacture of sugar honey. We are all aware that out here, it is sent in and sold in Halifax, and distributed among the smaller towns to be sold. We find it a great curse to our Province." I might say that I have sat at my desk and written sometimes for a week, and this is one of the many letters I got.

J. E. FRITH : For the last three times we have been told to go to Ottawa. The unanimous verdict of this Assocation has been that we require a special Bill to protect our industry at home and abroad. It will take a long time to go over all the reasons why we should have the Bill, but my opinion is that we need it. I have gone over this Province, and all through the Northwest Territory, and the general feeling is that we want this Bill, and that it is really necessary. Suppose we never have to exercise it, it goes out to the world that Canada is producing pure honey. The cost of getting the Bill through I consider nothing if we can afford it. Just as soon as we stop agitating for this Bill our reputation is going to be classed with the United States. We must not be discouraged because we have been down three times. I find the unanimous verdict is that we want such a Bill, and I think we ought to press for it here.

FOUL BROOD INSPECTOR'S REPORT.

The Foul Brood Inspector read his report as follows :

During 1895 I visited bee yards in the counties of Lambton, Middlesex, Oxford, Brant, Elgin, Norfolk, Wentworth, Lincoln, Perth, Wellington, Peel, York, Ontario, Hastings and Simcoe. I examined eighty-five apiaries, and found foul brood in thirty-two bee-yards, and other kinds of dead brood in many others. The great frosts in May, and the dry weather that set in right after, and continued for so long a time, was very hard on all apiaries on account of shutting off the honey flow, when the colonies had large quantities of larvæ to feed. When the *unsealed* stores were used up, the bees in many cases did not uncap the old sealed honey fast enough to keep pace with the large amount of larvæ that required so much feeding, and the result was a good deal of starved brood in several colonies, which was mistaken for foul brood in many cases. The great failure of the honey flow would have led to the wholesale spread of foul brood through robbing by the bees when the diseased colonies were being treated, if I had not taken particular pains to warn the bee-keepers well, and insisted upon everything being done exactly as I ordered. I went in for putting every diseased apiary in grand order, and for having as many if not more colonies at the close of the season than when I began. In every part of the Province that I went into I found the bee-keepers pleased when I called on them to examine their apiaries, with the exception of three men. One of these men had only four colonies, and they were bad with foul brood and near other apiaries. I explained to him how to cure, and urged him to do so. I also warned him of the great danger of his keeping the disease so near other bee yards, but it was all no use, he refused to cure. I waited for over six weeks for that man to get his few colonies cured, he did not even try to no anything. Then there was nothing left for me to do but to go and burn his foul broody colonies, so as to save other bee-keepers from having their apiaries ruined by his diseased stock. I burned one colony that was nearly dead with foul brood for a bee-keeper that I never could get to cure his few colonies, or do his duty like other men. I burned three very badly diseased colonies in the same apiary the year before. When a bee-keeper can cure a few colonies of foul brood in a short time, and is urged to do so time after time, and will not do it after being given every possible chance, then I have to stamp the disease out by fire for the public good. I burned thirteen colonies for another bee-keeper that were nearly dead with foul brood. In fact some colonies in the same apiary had died right out with the plague. I did my best with that man several times to melt up his diseased combs, and burned three foul broody colonies for him before, but all that had no effect on him. He would and did risk using old diseased combs until his apiary got into a horrid state with foul brood. I then stamped the plague out again by fire, so as to save the valuable apiaries in the same locality. I was very much pleased with the way all the other bee-keepers went to work and cured their apiaries of foul brood, and some of these men had nearly one hundred diseased colonies when they started to cure them. Five years ago last spring, when I set out to get all the diseased apiaries in the Province cured of foul brood, I soon learned that I had undertaken a tremendous job. I found the bee-yards in every locality that I went into at that time, in a horrible state with foul brood, and the disease spreading at an alarming rate. And to make matters worse, many were selling diseased colonies, and very few bee-keepers knew foul brood when they saw it. I had first to to take the greatest of pains to explain to every bee-keeper how to cure his colonies of foul brood, and then see that they made no mistakes, but did cure every colony. Some bee-keepers did and would make some mistakes, and that led to my having to write very many long letters to them hours after I should have been in my bed, so as to help them out by explaining everything again, which I always did.

I have handled the disease in six cities, and twenty-six counties, and made a great success of ridding out the disease by getting thousands of colonies cured of foul brood and put in grand order. Several sales of diseased colonies, amounting to hundreds of dollars, had taken place by the very best of men. I soon found that neither the buyers or sellers knew that the colonies had foul brood at the time of sale. I was chosen as the sole judge by all these parties. And in one case a note for $240 had been given. I decided what I believed

to be just and very fair to all, and I am very much pleased to say that I satisfied both the buyers and the sellers, and got everything settled very nicely. Five years ago last summer while on the rounds through the Province, I often met with opposition from the bee-keepers. Many of the small bee-keepers looked on the inspector's business as a scheme got up to drive them out of bee-keeping, and several had no faith in a cure. And some expected that I was going to stamp the disease out by fire. I was astonished to find so many holding such views in so many parts of Ontario. I felt very sorry for these people, and took the greatest of pains explaining to them that I came to cure and not to destroy any colony, if the bee-keepers would take hold and cure after I told them how to do it. Things have taken a great change since then. I do not find any more opposition, but all very willing to have me call and examine their apiaries.

My railway fares, time and livery hire for 1895 came to $673.40.

WM. McEVOY.

WOODBURN, Jan. 8th, 1896.

Mr. EVANS moved, seconded by Mr. CHRYSLER, that the report of Mr. Pettit be received, and that the Executive of this Association be instructed to press for the passage of the Pure Honey Bill with any amendment that they might deem advisable, and that the same committee be appointed and the Executive have power to decide whether one or three should go to Ottawa. Carried.

Moved by Mr. HOLTERMANN, seconded by Mr. HUGHES, that the Treasurer's report be adopted. Carried.

Moved by Mr. FRITH, seconded by Mr. CHRYSLER, that the report of the Foul Brood Inspector be adopted. Carried.

Moved by Mr. FRITH, seconded by JOHN NEWTON, that this convention desires herewith to express its appreciation of the work done throughout the Province by the Foul Brood Inspector, Wm. McEvoy, and to give their hearty endorsation of the methods of the cure as adopted by him ; also to express themselves as believing Mr. McEvoy's method for the cure of foul brood to be the best at present known. Carried.

Moved by Mr. HOLTERMANN, seconded by Mr. FRITH, that the report of the affiliated societies be received. Carried.

The convention then adjourned until the afternoon.

SECOND DAY—AFTERNOON SESSION.

Business was resumed at two o'clock p.m. The President occupied the chair. The first item on the programme was the reading of the following paper by Mr. C. W. POST, of Trenton :

OVER-STOCKING LOCALITIES.

The above topic has been discussed freely for the last few years, and after all said and done, we cannot find an apiarist to say just the number of colonies that can be kept in any certain locality to be of the greatest profit to their owner.

There are several obstacles to prevent us from ever knowing the greatest number of colonies that can be profitably kept in one locality for a term of years. A locality may produce a very large amount of honey-producing flora one year, and secrete nectar in abundance, and the next year the very opposite results may follow. Then, again, if the following season was just as favorable for honey-producing flora, the elements in the great laboratory of nature may be against the secretion of nectar.

Now, in the former case there would be very little danger of over-stocking, while in the latter even a few colonies would secure a very scanty supply. I don't think that there is any apiarist in this or any other country but will admit that any locality can be over-stocked, but as to the extent that this can be carried on with the greatest profit is what we are all looking for more knowledge.

For the last ten years I have been running out apiaries, and always have an average colony on scales, and for the last two years I compared the daily gain with colonies in small apiaries (other conditions being as nearly equal as we could get them), and in both cases they were equal.

In 1891 I placed one hundred colonies in a locality already stocked with the same number; in fact, they were in the same yard. There was a small apiary of about nineteen colonies about three miles away; each apiary had a colony on scales, and the average daily gain was about the same Through the basswood flow on favorable days the gain was from six to fifteen pounds a day, and for a few cool, chilly days, none of them gained an ounce.

The following season, 1892, I tried it on a much larger scale. I was running three out apiaries, and I moved them all home to Weller's Bay for the buckwheat flow. At that time I had 350 colonies, and three other apiarists moved 175 colonies and placed them along with mine, making 525 colonies in my apiary. At the same time I had a friend, seven miles from me to the west, with ninety colonies, localities about the same. We each had a colony on scales, and kept a daily record, and it was surprising to see how nearly alike the average daily gain was. My best three days in succession gave an average of ten pounds per day, while my friend to the west got thirty-one pounds in the same time. Then, again, there were several days in succession that neither of them gained an ounce, thus showing that as much depends on climatic conditions as on the blossoms.

In the above tests my localities were not over-stocked, but how much more they could have stood would be mere theory to say.

In locating out apiaries, I do not think it pays to have less than from 125 to 150 in the same yard. And if it should be somewhat over-stocked, I do not think the loss would be as heavy as the extra expense in running them in two different apiaries, this to apply for a term of years.

Mr. Holtermann: I have been out at Mr. Post's place different times. I was there at the time he mentioned. When the man brought down these bees, he had so many in one locality, and he thought he would get just as much honey as he could get had not the other man brought the bees down. I think he has some doubts about it in other localities. There is a great deal of buckwheat available there, so that it was an exceptional case.

Mr. F. Gemmell: I think we are all over-stocked in the west.

A Member: I have been under the impression in my locality that since there were more bees on the ground I have not been getting as much honey as I would have if they were fewer in number. As far as buckwheat is concerned, I do not think it makes any difference.

The Chairman: You think on white honey you could over-stock?

A Member: I think I would get more honey if there were fewer bees on the ground.

Mr. Brown: I am living in a locality where there is a large quantity of buckwheat grown annually, and I find the flow of buckwheat honey varies both in quality and quantity. For instance, three years ago the flow of buckwheat honey was very light, hardly any surplus whatever, and what little there was, was of a dark, reddish color. In 1895 (last season) the flow was good. I consider it would be very easy to over-stock the locality where the flow is light, but where the flow is good it is prerty hard to over-stock it where in another year fewer hives would overstock it.

Mr. Holmes: I would regard the instance referred to in the paper as being something out of the ordinary altogether, as I certainly consider from 150 to 200 colonies is sufficient for a locality, taking one year with another.

Mr. Frith: What would be the territorial dimensions for that?

Mr. Holmes: Two and one-half miles each direction for from 150 to 200 colonies. Perhaps I will be too severe in my view of that matter.

Mr. Frith: Do you think any apiaries should be placed closer than five miles from you?

Mr. Holmes: If a person who chances to be located within a mile and a half of me wants to keep bees, he has a perfect right to do so. It is not my prerogative to tell him to remove to California if he wants to keep bees.

Mr. Frith: For profit, you think apiaries should not be closer than five miles?

Moved by Mr. Best, seconded by Mr. Frith, that a vote of thanks be tendered to Mr. Post for his excellent paper on the question of "Over-stocking." Carried.

REVIEW OF PAPERS OF LAST ANNUAL MEETING.

Mr. Allen Pringle, of Selby, rendered the following criticism of the papers read at the last annual meeting of the Association: The duty which has been assigned me on this occasion is to review the papers presented to this Association at the last annual meeting, held in Stratford, with the exception of the President's address, which, of course, was not an apicultural subject, and my own address on "Education."

The first paper presented was by Mr. A. E. Sherrington, on "Conventions." The leading ideas of the brief paper were, first, that conventions are not only useful for the dissemination of knowledge, but are important social agencies, with which neary everybody will, I suppose, agree. Whether our own meetings are as sociable and harmonious as they might be, is another question. Second, that "in regard to the papers and essays that are read at conventions, they should be more in the line of questions than mere essays," with which many will not agree. And, third, that "the officers of an association should be changed quite frequently"—a very doubtful proposition, which needs much qualification, and from which many will dissent.

As to the desirability of "essays being mostly in the line of questions," I do not agree with that at all. We have our "Question Box," where any member may deposit his question, and it will receive attention, and that is the proper place for the questions.

Following out the line of question essays, what sort of report could we present to the Government and the public? Instead of good substantial papers, embracing the mature thought and experience of the best apiarists and members of this Society from year to year, we should have a crude mass of off-hand discussion, some of it wise and some otherwise, to present to the Government and public for their edification. It stands to reason, that when a member undertakes to write an essay for this or any other convention, he will put into that essay his best thought, and his ripest experience on the subject in hand. This is what we want to give weight and substance to our report, and to our Association; and not only to give useful and permanent information to each other, but to the great body of readers who are not present at our meetings.

As to the third point, that "the officers of an association should be changed quite frequently, just to infuse new blood into it," I cannot agree with that either. Indeed, it would be the ruination of most societies. When the right man is in the right place, it is a great mistake to put him out just to make a change.

The experience of an official, added to painstaking and faithfulness, is an important consideration. Take, for example, the present Secretary of this Society. There can be

little doubt that his long experience in that position enables him now to discharge his duties and functions, not only much easier, but much better than he could during his first years of service. Speaking for myself, I would want a much better reason for changing well-tried and faithful officials than merely for change or the introduction of "new blood."

The next paper or report read was one by F. M. Webster, of Ohio, on "Spraying with Arsenites vs. Bees," which was read to this Association by Mr. James Fletcher, of Ottawa, and commented on by him. The substance of Prof. Webster's paper was that experiments he had made proved not only that "bees are liable to be poisoned by spraying the bloom of fruit trees," but that the larvæ are also so liable.

Mr. Fletcher fully concurred in the conclusion reached by Prof. Webster from his experiments, which, Mr. Fletcher said, "had been carried on with great care by a competent man," and which showed "that there is danger of killing bees with a mixture applied to kill other insects." The conclusion, therefore, was that it was "wrong to apply Paris green when trees are in blossom," not only because of the danger to bees, but the liability of injuring the fertilizing powers of the trees. Mr. Fletcher took the further ground that after ten years' investigation of crop injuries by insects, he could not think "of a single kind of tree that requires the spraying to be done while the trees are in bloom," and that as Prof. Webster's experiments were the first scientific ones which had set the disputed question at rest, "we have, therefore, a firmer basis than ever for demanding the enforcement of the Act prohibiting the spraying of fruit trees while in bloom." As to the question whether the honey gathered from the poisoned bloom would be dangerous as food, Mr. Fletcher's opinion was "that it would do no harm to the individual eater," but that he would only give that as an opinion, not as knowledge.

Next came the "Foul Brood Inspector's Report." The gist of it was that the inspector, during 1894, had examined 105 apiaries, and found foul brood in thirty-nine of them—thirty-four of these being very bad with the disease, two in which the disease had not made much headway, and three where it had. The inspector found the people more willing than previously to "take hold" and cure their apiaries; nevertheless, the condition he found things in gave him more to do, he says, than "any person ever knew of." The wet weather of May and June of that year proved serious to the bees, the honey flow being so suddenly cut off when the hives were full of brood that the unsealed honey was soon used up, and then, as the bees failed to uncap fast enough for the brood, lots of it starved. The dead brood was supposed, by the inexperienced, to be foul brood, and a panic ensued, which kept our worthy inspector hustling at a fearful gait, "rushing here and there over the Province," but keeping "pretty well up with the work," so he tells us. He burned thirteen colonies in all—nine in the County of Halton, three in Wellington and one in Oxford. "The inspector's time, car fare and livery hire came to $662 25." I have one criticism or suggestion to make in reference to the inspector's work, which has been suggested to me by a careful reading of the Report I have just reviewed. It would seem from the Report that the inspector made no call on the deputy during the season, notwithstanding the repeated pressure of the work.

Now I submit that it would be well for the inspector, either to do less doctoring and more inspecting when there is a pressure upon him for his services in different places, or call out the deputy to assist him. I take this ground for the following reasons: In most, if not all cases, delay in the arrival of the inspector must be dangerous to the bee-keeper who has discovered that he has foul brood, and has sent for the inspector, and would be more dangerous to his neighbors. Now, if the inspector is not able to go promptly when he is urgently called for, the reason ought to be that he is simply inspecting and advising, not doctoring, those who were in ahead of the last applicant. That would be a good reason for the delay, provided the Government refused to pay for the services of the deputy. But I submit that it would not be a good reason for the dangerous delay on the inspector's part to say that he was "rushing" through as fast as possible, if, in the meantime, he were tarrying here and there to doctor as well as to

inspect and advise. I go even further than that. When the inspector has more urgent applications for his services than he can possibly attend to promptly, even though he may not be stopping to doctor, but is simply doing his duty inspecting and advising as fast as he can, it is, I submit, his duty to call in his deputy to his assistance unless the Government positively refused to pay the deputy under such circumstances. And there should be a distinct understanding with the Department on this point, for it is very important. The matter should be brought before the Minister of Agriculture. The inspector himself, and all of you, know the danger of delay in attending to diseased yards, and the injustice of it to the owners of those yards and their neighbors. For such delay there must be a good and sufficient reason as above indicated.

I trust these suggestions will be received by this Association—especially by the worthy inspector—in the spirit and intent with which they are given in our common interests.

The next paper was, "Will the Future of Bee-keeping Differ from the Past?" by Mr. W. Z. Hutchinson, editor of the *Bee-keepers' Review*, Flint, Michigan. Mr. Hutchinson thought that the bee-keeping of the future would differ from that of the past, and took a rather pessimistic view of its future. The industry was becoming a failure in many parts of the United States. The only reason the essayist knew for this was that "the natural honey pastures are cut away, and the artificial resources are not sufficient to make this business a profitable calling," added to which is "the summer drouth that results from the clearing away of the forests." There are many localities now in which the essayist would not, he tells us, "dare to depend for a living upon bee-keeping alone." In such places "bee-keeping as a specialty is doomed." In reviewing this paper I see nothing to criticize unless the author means to include Canada—especially Ontario—in his diagnosis. In that case I hardly think we need take as gloomy a view as he has taken of the future of bee culture in Canada.

The next paper presented was by Mr. R. H. Smith, on "How are Bees Wintering?" Mr. Smith had had experience in wintering one winter in the North-West, and fourteen years in the northern part of Ontario, and his conclusion was, after some experience in southern Ontario also, that for the northern parts cellar wintering is best, but for the southern portions clamp wintering is best. I see little, if anything, in Mr. Smith's brief paper to criticize.

The next was on "Some Difficulties," by Mr. J. K. Darling, of Almonte. Mr. Darling, in his brief paper, raised a lot of difficulties, some of which I fancy we should never be able to get over, and some of which we shall. There were winter losses, spring dwindling, swarming out, "balling" of queens, desertions, and a host of idiosyncracies and peculiarities—and even what Josh Billings would call "pure cussedness"—to which the little honey bee is addicted, as well as to gathering honey, all of which greatly puzzled as well as bothered our worthy member, Darling. This is not to be wondered at. The rest of us have been worried over these matters, too. Looking at some of the manœuvres on the part of the little insects, he has evidently come to the conclusion that the bee is a "thinker," and that some of them are a little "smarter than others," and that some of them can "sulk," and so forth, like the higher animal. In fact, they are not all "darlings," but some of them are more like little devils. I believe every word of this as to the "thinking," the "sulks," and other peculiarities which may proceed from the brain and nerve-ganglia of a honey-bee, as well as from those of a human. Both have this "dome of thought, or seat of gumption," as the case may be, but we have not, as yet, been able to locate the particular "bumps" in one as in the other. When, therefore, we cannot cure the "cussedness" of each other, how on earth can the essayist reasonably expect us to cure it in his bees? He imploringly asks us "how to keep the bees at home in the spring like good children; how to make them be kind to their mothers; how to induce lazy or sulky bees to work," etc., etc. For myself, I give it up, with the exception of the laziness and the sulks, which I sometimes deal with as I would with the able bodied tramp who is able to work but not willing, viz., withdraw the "grub" and starve him to it. In the case of the bees, when I find them playing that game, I take away their stores and say "work or starve."

Next was a paper by Mr. F. A. Gemmell, of Stratford, on the "Difficulties Experienced in Marketing Comb Honey." Only a portion of this paper was devoted to the subject in hand; and the substance of that portion was that the principal difficulty at present experienced in marketing comb-honey is the indisposition to handle it on the part of the dealers, which has been produced by the slovenly manner in which the article has been supplied to dealers by producers, causing them so much trouble and annoyance with it as to deter them altogether from handling comb-honey.

This is no doubt true, but it is equally true, that this slovenly work is not traceable to members of this Association, or readers of bee journals; but, for the most part, to the "one-horse" bee-keepers, who neither read journals nor use modern appliances.

Once in awhile, however, we must locate the dereliction at home among ourselves. I have seen, the past fall, supers of sections in the grocery store just as they came from the hives, covered with propolis and fast in the supers, so that the grocer or customer—not knowing just how to get them out—often break them in so doing. These sections were, of course, produced by an old box-hive bee-keeper, and any bee-keeper of modern methods who takes his honey to market in that shape ought to be read out of the fraternity. The few suggestions of the essay on marketing comb-honey were good.

The next paper was a report by Prof. F. T. Shutt, the chemist of the Experimental Farms at Ottawa, upon "Experiments with Foundation," read by Mr. Fletcher and commented upon by him. The gist of the report may be summed up as follows: "The weight of the wax produced by the bees is inversely proportional to the amount of wax supplied as foundation." In other words, the more foundation you supply the bees, of the whole quantity needed, the less, of course, the bees will have to secrete and supply themselves. It does not follow, however, that it would be wise to supply the bees "all the wax necessary for the construction of the comb." "The production of the wax by the bees is a normal function, and its entire cessation might possibly affect the honey yield or lead to a derangement of the general health of the bees," so says the experimenter. It seems to me, however, that there is a slight misapprehension here on his part. He appears to assume that it would be possible to give the bees all the wax they require. This is, I think, quite impossible. We might, it is true, give them all they require, that is, place it as best we could at their disposal, but it would not be "available" to them. They would not take of it all they actually need. Some, more or less, they would secrete themselves. The other and more important point of the report is "that a dark or deeply colored foundation gives a dark and unsightly 'fish-bone' in the resulting comb, materially affecting its palatability and injuring the sale." The moral of this is, to use nothing in your sections but the very lightest and nicest foundation. But I would go one better than this and use none at all in sections, or, at any rate, nothing more than a "starter" of the very best. It would appear also from this report that sugar fed to bees produces more wax than a like weight of honey, and that the free use of pollen by the bees when secreting wax "greatly reduces the amount of honey or sugar otherwise required." That, however, is nothing new. The other main point of practical importance in the report is that the experiments emphatically point to "the economy of supplying the bees with a foundation of not more than seven and a half feet to eight feet to the pound."

The next paper presented was that on "Education"—I shall have to charitably pass over in silence. Should the writer of it get striking out at himself there is no telling what the consequences might be.

This concluded the regular papers of last year's Convention; but at the public meeting on the evening of the second day were two addresses well worthy of notice; one by Mr. R. McKnight, of Owen Sound, on the "Queen Bee," and the other by Prof. C. C. James, Deputy Minister of Agriculture for Ontario, on "The Value of Skill."

Between these addresses was also an interesting explanation of the lantern views, illustrating the structure and habits of bees, by Mr. R. F. Holtermann, of this city.

Mr. McKnight's address on the "Queen Bee" was in his usual terse, humorous style, and was an admirable one for such an occasion, though brief. Among other strange facts about "our lady the queen" (bee) he told the astonished people how she could "produce three times her own weight in eggs in a day," and gave those top-lofty rivals of ours, the stockmen, a valuable hint. But, so far, since the address was delivered, I have not heard that they have been able to realize the friendly suggestion thrown out to them by the speaker, and that suggestion was, "that they ought to set to and discover rations for a cow that would enable her to give three times her own weight in milk in a day, and keep it up; and the same with turkeys, "instead of stuffing them for ten days with peas." Sir, these dairymen and their big stock are not "in it" with us and our little queen.

The address by Prof. James was delivered in his usual able and effective manner, showing by different examples and illustrations the value of skilled labor. The product which required skill to produce it brought more in the market than that which required less skill. Skill, of course, is a leading factor in determining price, but it is possible to place too much stress on it, as there are various other factors in the problem.

I have endeavored to perform a delicate and difficult task fairly.

Mr. Darling: I do not know whether any person has any desire to criticize the critic or not, but I certainly have had great pleasure in listening to these criticisms of what came before the convention last year, and I move a vote of thanks for the able manner in which he has made his criticisms.

Mr. McKnight: That paper is perhaps more favorable to this Association than we have yet realized; it brings up in a legitimate way the business and work which was discussed during our Association last year. It is an admirable paper to afford food for thought. I would not expect anything else from Mr. Pringle. We all know there is a diversity of opinion as to the wisdom of reading papers at conventions of this kind, but I am more and more impressed with the belief that it is a good plan, and I am sure it is a plan that is desired by the Government. I make this statement from the fact that I read in a report of the *Pet Stock Journal* of the address delivered by Mr. James, Deputy Minister of Agriculture, in which he urged upon that Association the desirability of bringing up papers of this character, and there was more food for thought in them when read by the public than in the imperfect report that must necessarily be given to the country of what is said.

Mr. McEvoy: I have been five years in the Province, and I do not think there is a single person who can say they ever got the disease through me not getting there in time. Sometimes I put in my time curing, but not very often. Take a case we come across sometimes—that of a man who is pretty old. You have to talk a little longer to explain to that man. Mr. Pringle will give me credit for firing some.

Mr. Pringle: Certainly.

A. E. Sherrington: I want to say that Mr. Pringle's paper is first-class in every respect. I think it is a move in the right direction. If this Association's work is to become profitable we must have discussion on bee-keeping, and unless we can open up discussions by papers or through question boxes, it will not be very profitable.

J. W. Sparling: Mr. Pringle spoke about using less foundation for sections.

Mr. Pringle: I believe in using it in brood chambers. I give my opinion that the less we use in the sections the better, but what you do use should be the very best.

Mr. Sparling: I would like to hear from some of the other members, not as to which is the most palatable, but which is the most profitable. There was another matter with regard to the weight of the foundation. It was exceedingly heavy. Seven and a half feet to the pound would be exceedingly heavy foundation for sections.

A Member: I have been very much pleased with the criticisms of last year's papers. I must say I heartily approve of the work that has been done.

Mr. GEMMELL: With regard to the use of foundations in sections, if you were speaking from a dollar and cents point of view I would say that I would do the very reverse of Mr. Pringle, I would have no foundation in the brood chamber, but I would in the section.

A MEMBER: As I understand it, you mean to use a "starter" in the brood chamber

Mr. GEMMELL: Yes.

R. H. SMITH: As regards foundations for sections, we find that for honey for shipping purposes we want full sheets. By that means you get it full, and better finished to the wood all around.

Mr. HALL: I am keeping bees, first for pleasure, and secondly, and more especially, for the profit, and as you know I have done a little in taking comb honey, and some of you have seen that I can take some worth looking at. I don't want any "starters" in my sections. I don't want any starters in the body of the hive unless it is a swarm, and then I want starters. I want sections filled up with just such a weight of foundation as that man spoke of—seven and a half to eight feet to the pound, but I want to have it so that the bees will utilize the wax.

A MEMBER: I would like to ask if there is anybody who has tried starting sections on top and bottom?

Mr. GEMMELL: I have never used starters on top and bottom, but I have used a full sheet of foundation, coming within three-quarters of an inch at the bottom, and then put a starter at the bottom so that the bees would join them together.

Mr. SMITH: I may say I have tried the same thing, and although it makes a first-class job it is doubtful whether it pays for the trouble.

Mr. MCKNIGHT: I would ask the President if he has used both light and heavy foundation for honey-comb?

Mr. HALL: I have never used heavier foundation than seven and a half to eight feet to the pound. I have used lighter foundation, twelve feet to the pound.

Mr. MCKNIGHT: Did you ever in your experience find that the proportionate thickness of the fish-bone was as that of the foundation you put in?

Mr. HALL: The reverse.

Mr. MCKNIGHT: Your experience, I think, is somewhat different from the experience of Mr. Fletcher.

Mr. HALL: If you take Mr. Vanduzen's flat-bottomed foundation, take it thin, and it remains the same thickness as you gave it to the bees. Give it to them thin and it remains the same thickness. Take the Pellem or take the Given and give it to them thick, make a good wax and they pull it down to a very thin comb. I have tried the starter on the bottom, on a large scale, every other frame with four sections in. I have marked it, and if you or any other man could tell which had the starter on the bottom and which had not, unless you read it on top of the frame, you will beat me.

Mr. GEMMELL: That is right in a good year, but in a bad year it is different. If you put a starter on the bottom, you must put it right from one side to the other. They will join two pieces of the foundation and leave a little hole in the section. You want a foundation right up to the section.

Mr. NEWTON: Although I am of the same school as Mr. Hall, since I have branched out for myself I have fallen away from his ideas. I do not believe in heavy foundation in sections. I think in nine cases out of ten you will find the base much heavier than you will if you use thin foundation in sections. I have tried it on the Pellem and Vanduzen, and I think you will find it heavier on the Pellem. I have cut honey out of brood frames with much heavier foundation and I have found it very thick. I have been very doubtful myself as to the profit of using extra light foundation.

Mr. HALL: Was the comb-honey at Chicago worth looking at?

Mr. PRINGLE: I should say it was, by the way J. B. Hall came out.

Mr. HALL: Taken on foundation between seven and eight feet to the pound.

Mr. FRITH: There was a question of marketing in Mr. Pringle's address. In all the answers that have been given with regard to comb foundation, there has been no reference made to marketing of comb-honey. During the last two or three years I have taken some pains to inquire of dealers of honey in Winnipeg, and a number of towns through the west, and it just struck me that there might be an improvement. Dealers in Winnipeg this fall declared that they should never get another pound of honey from Ontario. It was in such bad shape when it arrived there, and the principal difficulty was that the honey had separated from the frame of the section and, of course, it ran out and partly granulated. I tried seven or eight crates in one shipment, and I could not get one section out without some extra work. I could not get it out whole. Would not foundation at the top or the bottom, or one piece on the right-hand side, or one piece on the left-hand side have something to do with that?

Mr. PRINGLE: The comb-honey that I have raised is all sold on the local market, with very few exceptions. I did send a little to New York by special order this fall, and it went in perfect condition. I think that where honey is to be shipped a long distance, as Mr. Hall has said, that a full sheet of foundation to insure its attachment all around would perhaps be better. In that case only the very best ought to be used, and there is a great deal in the packing of honey to ship. Did Mr. Frith inquire as to the packing?

Mr. FRITH: I took a great deal of pains to inquire into all the details of the packing, and I was satisfied that the packing in many cases was not right; it was wrong.

Mr. PRINGLE: I do not care how your comb-honey is produced, or how much foundation you may have used, if you are shipping it a long distance, and if you do not pack it right you will break it. When I was at Chicago at the World's Fair, after I had opened all my honey not a single section was broken. The honey came in there from States not far off, and I saw it running over the floor of the Agricultural Building, enough to almost sicken a bee-keeper. It was all from bad packing. When you came to examine the sections you found they were all filled and attached all around, but still they were broken up. It is true I superintended the handling of my own honey. Still, I think, the honey I took would have stood a good deal of handling. The honey produced in my sections, without any foundation, is better than any honey you can produce with foundation.

Mr. DARLING: I do not know that I have ever used full sheets of foundation. I have put them in just enough to start the bees, but I have used the best. I do not ship comb-honey at all. One one occasion some parties were going to Pilot Mound, that is past Winnipeg, and they wanted some fifty pounds of comb-honey and they applied to me. My honey being built on starters, and not one section in one hundred that had not pop holes around the edge, I felt doubtful whether I could fix that honey so that it would go there safely. They said they would take the chance, and I packed fifty pounds in a box and made it so that it would fit in a trunk. I put in the best sections I had, I took the box to the man's house and put it in the trunk. I saw some of the friends of the parties afterwards, and I am glad to say it went not only to Winnipeg, but to Pilot Mound, safe and sound.

Mr. MCEVOY: I will tell you what I think about it. If we get the best wax, nice and white, about eleven or twelve feet to the pound, and fill your sections full, there will be no trouble about the fish-bone, and it will be all right.

Mr. CHRYSLER: Twelve feet to the pound, seven and a half and eight feet to the pound, might be brought to the same result by treating and building the foundation as far as the fish-bone is concerned.

Mr. FRITH: When I spoke before I was speaking with reference to the foundation part of the affair. If you are satisfied with the question of the foundation I would really like to make a more prominent question about sending honey away I feel that there might be a very material improvement made in shipping comb

honey. Mr. Pringle intimated he had no losses, and Mr. Darling says he had no loss in sending to Pilot Mound; but neither of them have said whether their method would be practical in shipping large quantities of honey to send out of this market, and perhaps some in this audience have tried their hand in sending their honey to Manitoba. If we could devise some method of reaching that country with comb-honey there would be a good opening there for years to come, and the probabilities are that when we have a good crop here, they will have a poor crop on the other side of the continent.

Mr. SPARLING: I think the great difficulty in marketing comb-honey this year has been in getting it to market. I suppose in going to the North-West, the cars would be shunted a good deal.

Mr. HALL: I have shipped honey to the North-West. I have shipped $1,100 worth at a time, and I have yet to find a section broken down; but they have sent to me again and again for other lots and said nothing to me about it. Therefore, I have taken it for granted that they were satisfied on receipt of it. In shipping comb-honey I put a paper dish in the bottom of every crate. I also put in strips of wood to set the corners of the sections on, which forms a spring and if one of them should be broken down, there is room for the honey beneath the section, and these sections come out clean. There is nothing to stick to. If you want it to go from here to British Columbia you must ship in single crates, packed in crates, as I told you, or you put it in packing cases holding 200 pounds, with two handles so that two men can pick it up and carry it along. Either of these conditions will take comb-honey to England. It has gone that way and fetches sixty cents a pound when it gets there, and I am glad it did, for the buyer paid me eighteen cents. You may shunt your cars from now to the end of the year and it will not affect it; but it is dropping the crates six inches on the floor that does the damage. If you put it into 200 pound cases, one man cannot pick it up, he will have to drop it, or there will have to be two fellows to pick it up. I will tell you how I came to use foundation. I thought these men knew and I followed their example and put in a bigger piece, and I found they were getting on much faster with the bigger piece; then I filled it one-half full, and then I filled it up. At this time I was taking it in two pound sections. I would get 150 pounds or 200 or 300 pounds in a hive. People said, "How do you get so much?" and I said, "We are making the bees work." I did not tell them about the foundation.

Mr. MCKNIGHT: I am surprised that Mr. Frith found so much Ontario honey in Manitoba in that condition. Nearly all the comb-honey I produce goes to Manitoba, and a good deal further west than Manitoba, and I have never yet had the first complaint of breakage or anything in that way. My system of packing is very simple and inexpensive. I will tell you how I pack it. I prefer having section cases that hold a dozen sections, they are pretty thick in the end. I would not use thin crates for this purpose at all, the ends of my honey crates are seven-eighths of an inch in thickness, with a hand hold. I have my honey done up in section cases, three of them, one on top of the other, and I put rows of a few ordinary laths on the face and edges and up along each end, and one behind, then the face is glass. And I put along the face two laths diagonally, across the glass, I used to fasten these together by screw nails, now I use ordinary wire nails. I have shipped all the comb-honey I have produced, and I have still to learn of a single section that has broken in transit. They lift the three together, and they see what they are handling, and it is perfectly safe.

A MEMBER: Do you raise the sections from the bottom?

Mr. MCKNIGHT: Yes; I just use a thick piece of manilla paper. I quite agree with Mr. Pringle that if you want a first class article of honey, the less foundation you use the better. Anybody that takes honey with fish-bone in it and honey with the natural comb will very soon discover how quickly one dissolves in the mouth, and the other does not. I have always wondered why comb-honey was preferred to extracted honey. I have always wondered why it is, that people prefer to pay fifty per cent. more for chewing this wax.

Mr. JOHN NEWTON: I would like to say that I have shipped several times to Winnipeg, and I have shipped in the same way as Mr. Hall. I do not agree altogether with Mr. McKnight, although I have shipped honey in the same way as he has. In most instances you will find that the cases are soiled, and I think it best, for all the difference, to re-crate them in larger crates. I think they are cleaner and more fit to be seen when they are set up in the stores.

Mr. PRINGLE: Never put a section in for shipping where it is not filled up all around. Be sure and put the handles on the boxes. Pack your comb honey so that no matter which way the boxes turn, the sections will not give. They will be close together and pack them around with something that will make them tight. These are the essential points in shipping comb-honey.

ELECTION OF OFFICERS.

The result of the election of officers for 1896 will be found on page VI.

RESOLUTIONS.

Upon motion it was decided that the next convention shall be held in Toronto.

Moved by Mr. SHERRINGTON, seconded by Mr. PICKET, that the annual meeting be held in December instead of in January, the date to be left to the Executive Committee. Carried.

Moved by Mr. CHRYSLER, seconded by Mr. BEST, that a letter of condolence be sent to the relatives of the late F. A. Rose. Carried.

Moved by Mr. SPARLING, seconded by Mr. EVANS, that the premium to the members of the Ontario Bee-keepers' Association be the same as last year, *The Canadian Bee Journal*, subject to the approval of the Board of Directors. Carried.

SECOND DAY—EVENING SESSION.

The meeting opened at eight o'clock, His Worship, Mayor ELLIOT, in the chair, who after calling the meeting to order, said: In the absence of the Hon. A. S. Hardy, I have been requested to take the chair, and am afraid I will prove a poor substitute for the honorable gentleman. The Bee-keepers' Association is assuming large proportions, and the industry in the Province of Ontario is extending. I understand you have already under the supervision of the Government an inspector known as the "Foul Brood Inspector," whose duty is to see that disease is kept down and not allowed to spread from one bee yard to another, and I understand that your Association is now endeavoring to get an Act passed providing that honey should not be sold or offered for sale that is adulterated. I think your object is commendable, and I hope you will be able to effect your purpose. I am not posted with regard to the bee, but I believe there are various kinds of bees, Italian bees, bumble bees, and other bees. When I was a boy I knew more about the bee than I do now. I have a recollection of looking for bee nests, not bee hives; we did not want to find them so thick as that. We sometimes found them in a stump, and very often had to destroy a hat in keeping them at a respectful distance. I hope this Convention has been a benefit to those who are here. As

a citizen of Brantford I bid you welcome, and hope you have enjoyed yourselves, and have thought so well of Brantford that on some future occasion we will have you here again. (Applause).

The CHAIRMAN: I have no doubt we will enjoy the address to be given by Mr. McKnight of Owen Sound.

ADDRESS BY MR. McKNIGHT.

Mr. McKNIGHT: I may say ladies and gentlemen, ladies especially, and gentlemen who are citizens of Brantford, that the Association of Bee-keepers present has adopted the itinerant principle of holding meetings. It roves from place to place; it is here this year, and yonder next year. We find this policy both profitable and pleasant. Of the profit of the policy I need say nothing. This however largely consists in the fact that it gives us an opportunity of meeting with, and becoming acquainted with, the citizens of the various towns and cities through the country, and in connection with this we have specially the practice which all of us enjoy very much, and that is one evening during the course of our meetings, of laying aside the ponderous, serious, questions, that it is our habit to discuss learnedly and moderately, and holding an open meeting, so that the citizens of the town may meet with us, and enjoy with us a thoroughly pleasant evening. It is not an evidence of weakness on the part of Bee-keepers to say that we feel flattered, for wherever we go, we are always honored with the presence of the mayor and ministers, and men whom the country delight to honor. Last year at Stratford we had the honor of having as our chairman, that sturdy commoner (the Speaker of the Legislature of Ontario), the Hon. Mr. Ballantyne. Last evening we had the honor of a visit from the oldest colleague of the veteran premier of the Province, under whose administration our industry has been fostered and promoted by liberal aid. I assure you, Mr. Mayor, that I speak the sentiments of my brother bee-keepers when I say we feel highly honored by our meeting being graced by the chief magistrate of the city of Brantford on this occasion. My name is down for an address. Well, I have no address, but I do not think much of the man who finds himself in a tight place and does not make an effort to get out of it. I will make an effort this evening by giving you another man's address. It is an address with which you are all familiar, an address that I have known since I was a boy, it is the address of Tell to his native Alps. The speaker then delighted the audience with a magnificent display of oratory, interspersing his remarks with patriotic sentiments and well rendered recitations of poetry. (Applause).

The CHAIRMAN: Mr. McKnight is a thorough representative of his own country. If he can say all that when he has nothing to say, what could he say if he had something to say? The remarks on patriotism call to my attention an article I saw in the Buffalo *Express*, they referred to the fact that when the trouble took place in the Transvaal, Mr. Olney, Secretary, of the United States, requested England to see that the American citizens were taken care of, so that they have to call on the Old Lady yet to take care of her children. (Applause).

The CHAIRMAN: The next is an address from the president whom the Bee-keepers' Association has elected for the next year. We who are citizens of Brantford know the energy Mr. Holtermann has thrown into this industry. I have no doubt he will give a very instructive address, and when he gets through we will have more knowledge, than we now have about the lively bee.

ONTARIO HONEY.

Mr. HOLTERMANN: One of the objects of having these meetings in the cities in which we gather, I believe, is to try and bring out the citizens, and at the meetings bring up such matters as will give them a greater knowledge of bee-keeping, the value of honey as a food, and in that way to benefit both the bee-keepers and the citizens. There is a distinct line between bee-keeping in the present, and bee-keeping in the past, that is before the invention of the "movable frame" hive. At that time we had a box hive and straw skeps, and we were unable to apply the skill and study to the same extent as we can at the present time. The invention of the movable frame hive, by the late Rev. L. L. Langstroth, has enabled us to make great progress in bee-keeping. Before that it was a matter of placing these boxes or straw hives on a stand, in the fall of the year, selecting those which should be kept through the winter, and those which should be smothered. Since the invention of the movable frame hive, we have invented the "honey extractor" and the "comb foundation." Now, the great difficulty with bee-keepers during the past has been that a great many have attempted to keep bees, with the limited amount of skill, experience and time that was used in the old box hive, and the result was that a great many have been disappointed, and they have not made money but have actually lost everything they have put into the business.

At the present time the Bee-keepers' Association receive a grant from the Province of Ontario, which grant is used for the purpose of enabling us to perfect ourselves in the art of bee-keeping and also to increase the bee keeping industry throughout the Province, and we have also received from the Legislature a great deal of wise legislation. As you are aware at the present time, the Dominion Parliament have made a promise that they are going to assist us in marketing our honey in foreign countries. In the last report of the Department of Agriculture at Toronto, the number of colonies of bees in the possession of farmers in 1894 was given at 200,094, valued at $1,051,574, while 195.822 pounds were reported in 1892. In 1894 the honey produced was a trifle over thirty pounds per colony, but 1894 was not a good season, and was below the average.

As an Association and as bee-keepers, I do not think we have done enough in educating the general public as to the value of honey. A great deal can be said along these lines of educating the people as to judging a good article of honey. Now a great many people buy granulated honey, and they have an idea that it is an adulterated article, whereas the fact of the matter is, it is an indication of purity. And there are some who actually set that honey aside and do not use it, because they do not know how to liquify it. If you set it in hot water (without boiling) you bring it back to its liquid state and it is just as good as it was before. Then again some people buy adulterated honey, for a pure article, and they are likely not to buy again. Then other people take comb-honey and put it in a cellar. Honey absorbs moisture very quickly which causes the honey to become sour and ferment, and if extracted honey is put in a damp atmosphere, unless sealed, it detoriorates in quality. My opinion is that we can increase the amount of honey sold in our own Province and Dominion, very materially, I think a great deal can be done to develop the bee industry just as much as the dairy industry has been developed. Prof. Robertson, and Prof. Dean, are working to improve the dairy industry and to increase the sale of the article, at home and abroad, and I think we can develop bee-keeping in the same way. Some have had the view that it is inadvisable to increase the keeping of bees, through the Province, but as long as we try to improve the quality and to increase the demand in the market, we are all right, and I think we have a great future before us, because there is no country which is so well adapted for bee-keeping as the Province of Ontario and other parts of the Dominion. In speaking of the foreign market, I would just mention that the *British Bee Journal* gives the honey importation for June as $27,038, at that rate for the year at seven cents a pound, which is about the price we get for our honey, if we export it, would be 4,000,000 lbs. in one year. Of course we cannot secure the whole of the market. I fancy a considerable portion of that honey is of an inferior quality, and comes from such countries as Chili. There are

districts throughout Ontario, where a good deal of buckwheat honey is produced, that can be sold at the same price. I may say it has been suggested, that the Dominion Government should handle our honey throughout Great Britain in the same manner in which they propose handling meat. I spoke to Prof. Robertson, about it and he said he would not undertake it, for some months, and it would be impossible for him to think of handling it before June or July; of course, till that time we will not have any honey, and if they can do it then that is just the time we will want them to.

The existence of the bee, is not for gathering honey alone, but the primary object is to assist in the fertilization of flowers. The whole construction of flowers is to secure as much as possible of cross fertilization. We have the pistils and the stamens, one containing pollen, that is little fine dust and it is necessary for that to come in contact with the coresponding parts of the flower in order to secure fruit. For instance in the apple, it is necessary to secure five distinct fertilizations. It is really the fusion of five fruits. Take the apple and cut it across, and you will find the core is dived into five parts, if you find one seed that is not properly developed, and it has not been injured externally, if you cut that across, you will find that the pips in that part of the apple are shrivelled and shrunk; in that case we have had two, three or four fertilizations, and not the fifth. In our Dominion we have really an artificial condition in plant life. By that I mean we have in our immense orchards, which have so many blossoms in the spring of the year, what is an artificial condition, that is not natural to this country in the forests. And to correct this, nature has to help itself, and is trying to do so with these insects. And by means of the honey-bee, you have an artificial condition of insect life, for the honey-bee is not a native of our country. Most of the other insects are simply females that live through the winter, and there are just a few of them. But with the honey-bee we have a large number of workers perhaps 10,000, 15,000 or 30,000 in a hive, and just as soon as the sun shines out, these fly out, ready to carry out this work of fertilizing blossoms, and we have the artificial condition of plant life on the one side, and artificial condition of insect life on the other. Bee-keeping takes absolutely nothing from the fertility of the soil. The dairymen have pushed that idea everywhere prominently. The constituents in butter are those that come from the atmosphere, and with honey it is the same. It takes nothing from the soil, and in these days when farms are decreasing in fertility it is an important point. Again bee-keeping displaces no other crop on the farm. We avail ourselves of the flowers which naturally exist in the neighborhood. Whilst there are many men, who are not adapted to keeping bees, who go into the business, yet there are farmer's sons and daughters, who might remain at home on the farm and with a small capital, engage in the keeping of bees, and perhaps make an independent living in that way.

Bee-keeping is very interesting. The queen is the mother of the hive. She deposits all the eggs. We have also drones and the worker-bees. The queen is the mother; the workers are also females and the drones are the males. Under certain conditions the bees will build queen cells. I have here a frame, which contains queen cells. The conditions under which they will build queen cells, are that they either want to swarm, or they have lost their queen. From the same eggs that will produce a worker-bee we can develop a queen. The instinct of the queen is just simply the production of eggs, and the tongue and sting of the queen are not developed to the same extent as in the worker-bee, and in the queen bee we have an insect, which will live from three to five years; the worker bee will only live from six to eight months. There is only one queen in a hive; if many of these young queens hatch at the same time, as soon as one hatches she begins to look around for those queen cells and begins to tear them down. If five or six hatch at the same time, they go around the cells until they meet, and then they have a royal combat, and it is only the strongest and most active that surive in the hive, and in that way we get the survival of the fittest. It takes twenty-one days to develop the worker bee. The worker-bee has the instinct to carry on the work of the hive.

Now, after these few rambling remarks I will conclude. If they will lead us to study a little more, some of the habits of the bee, and if some of those who are present will understand better how to handle honey when they buy it, I will feel that the few words I have spoken have not been in vain.

The CHAIRMAN: I am sure those of our citizens, who are here, will agree with me when I say that the remarks of Mr. Holtermann have been instructive. The next time the bee-keepers have a meeting in Brantford, if they want to have a large gathering, they ought to have a few small pots of honey around, to give away free, and there is no doubt you will have the house crowded.

After the "Telephone City Quartette" rendered another song, Mr. McKnight, moved that the best thanks of the meeting be tendered to the Mayor and the Quartette for their attendance, which was carried.

The meeting was brought to a close by the singing of "God Save the Queen."

The members attending the convention were then entertained at a banquet by the newly elected President, R. F. Holtermann.

THIRD DAY—MORNING SESSION.

The meeting opened at nine o'clock, the President, R. F. HOLTERMANN, in the chair

Mr. MCKNIGHT discussed the financial position of the Association.

Mr. HALL contended that the Association was in a good financial position.

Mr. MCKNIGHT: I want to discover if, as was reported in the Toronto *Globe*, there was appropriated last year $200 for experiments in bee-keeping and $100 for the North American Bee-keepers' Association.

Mr. HOLTERMANN: In the first place, I would say that as far as experiments in bee-keeping are concerned, it has nothing whatever to do with the committee appointed to ask for an increase of grant, and nothing whatever to do with the funds of this Association. Last year Mr. Picket and myself were appointed a committee to try and secure an increase of the grant for the Ontario Bee-keepers' Association. We received a grant of $150. It was not granted to the North American Bee-keepers' Association. It was granted to the Ontario Bee-keepers' Association, and it was paid over to the Treasurer unconditionally.

Mr. DARLING: One of the reasons for asking for the increase of grant, was that we were unable to give the affiliated societies enough money to make it worth while to affiliate. But we did not instruct the committee to make that the only reason, and I presume it was granted for that and other purposes. I know it was stated in the papers there were $100 appropriated on account of the North American Bee-keepers' Association coming here, but that is not correct.

Mr. PICKET: Being one of the delegates that was sent down to ask for the grant, I may say there was no money asked for the North American Bee-keepers' Association. The Minister wanted to know why we wanted this money, and we had to put our reasons in writing.

Moved by Mr. PETTIT, seconded by Mr. GEMMELL, that Mr. Heise and Mr. Evans be the Revising Committee.

SOME EXPERIMENTS.

An account of some experiments by R. L. Taylor, of Lapeer, Mich., were then read as follows :

It is an encouragement to the experimenter, that an experiment conducted for one purpose is often found to open up other avenues of investigation and throw light upon other points than the one particularly under consideration. An experiment made last autumn, partly to determine the results that would follow an attempt to produce comb-honey by feeding under circumstances which were in violation of most of the generally accepted canons on that subject is a case in point. The unusual character of the season, as indicated by an almost total absence of swarming, as well as of the honey-flow from white clover and linden, made it necessary to use desperate measures in order to make, at all, some of the experiments for which plans had been made, and in this case I was compelled to use syrup made from granulated sugar. The syrup was made by boiling together equal quantities of sugar and water. It was reduced in weight in making by evaporation, so that on the average the sugar and water from which the sugar was made exceeded the weight of the syrup by 14.65 per cent. Making use of this fact we find that 122¼ pounds of sugar were fed to colony No. 1, 78¾ into that fed No. 2, and 73 into that fed No. 3. Now assuming that the bees in handling it would reduce the syrup to a weight equal to that of the sugar from which it was made, we find by subtracting the increased weight of the supers and the brood chamber in each case from the weight of the sugar used in making the feed for that particular colony, that during the thirty odd days of the continuance of the experiment, colony No. 1 totally consumed 53 13-16 pounds of sugar, No. 2, 11 6-16 pounds, No. 3, 19 11-16 pounds.

	Weight of brood chamber August 10th.	Weight of brood chamber September.	Weight of brood chamber November 20th.	Weight of syrup fed.	Weight of sugar in syrup fed.	Weight of sections at end of experiment.	Gain in weight of brood chamber.	Amount consumed if syrup from 1 lb. sugar were evaporated to 1 lb.	Amount consumed if syrup from 1 lb. sugar were evaporated to 1¼ lbs.
	lbs. oz.	lbs. oz.	lbs. oz.	lbs. oz.	lbs. oz	lbs. oz.	lbs. oz.	lbs oz.	lbs. oz.
No. 1	51 8	73 12	67 12	213 4	122 4	46 7	22 0	53 13	18 0
No. 2	57 8	83 4	67 12	137 8	78 12	41 6	25 12	11 10	31 0
No. 3	53 0	84 0	74 0	127 8	73 0	24 5	29 0	19 11	38 0

But probably the weight of the syrup could not be reduced nearly so much, and if we assume that one pound of sugar would make one and a quarter pounds of well cured syrup, which would likely be nearly correct, we see that colony No. 1 consumed during the time stated, disregarding fractions, the large quantity of 84 pounds, No. 2, 31 pounds and No. 3 38 pounds.

During most of the time there was a moderate flow from fall flowers to the extent that the stronger colonies of the apiary gained in weight from twenty to thirty pounds. The colonies employed in the experiment owing to the feeding undoubtedly did not gather so large a quantity as they would have otherwise, and likely on account of different dispositions gave different degrees of attention to the nectar in the flowers. This seems the more probable on account of the great difference, as shown in the table, between the amount consumed by colony No. 1 and that consumed by each of the other two. But in

the case of No. 1, if we allow the utmost that can be claimed that it gathered no honey from the fields at all, we are still confronted by the fact that in addition to large quantities of pollen it consumed during this period of activity, as food for brood and bees, and for maintaining the proper temperature, and also for the production of the wax necessary for working out, and capping combs from full sheets of foundation contained in sections filling two sections cases, eighty-four pounds of well ripened syrup, being at the rate of upwards of two and a half pounds per day.

This would seem to have some bearing upon the question sometimes raised as to how much honey a fair colony requires for its own purposes in the course of a year. My space will not allow me to inquire into this question now, but I wish in a word to direct attention to that other question which is sometimes given in response to this one, viz.: Of what use is a knowledge of how much a colony uses in a year? They must have it anyway; let us study something practical. At first blush this sort of argument seems in a way conclusive, but when we consider that the large consumption referred to must have been largely for the rearing of brood and the production of wax, and that it is the instinct of the bee to rear nearly twice as much brood during the last half of June and the first half of July, when the most valuable honey is gathered, as during August and September, and that during that time (June and July), if the honey is good, twice as much wax in some shape is required, and the feeding of the brood requires not only the time of the nurse bees to prepare the food, but also the time of the field-bees to gather the necessary pollen of which large quantities are used; and when we further remember that the rearing of the brood can be curtailed at pleasure, and that wax can be to a considerable extent supplied the bees in an acceptable shape, it becomes an intensely practical matter to know not only how much the bees consume, but also for what purposes they consume it. Then what an advantage it would be to have the consumption so itemized that it might be seen how much went for each purpose, so as to make a solid foundation for a calculation to determine whether it is more profitable to produce honey or brood and wax. It may be that those who advocate extreme contraction of the brood chamber during white clover and linden time, or the caging of the queen, and the supplying of wax in the shape of comb foundation to the greatest possible extent in the absence of comb, are right.

Mr. HOLTERMANN: Part of the work of the Experimental Apiary this summer endorsed very largely just exactly what Mr. Taylor has said. That the amount which is lost, is much larger than is generally supposed.

Mr. FRITH: You would judge then, that it would not be very profitable to feed syrup for comb honey.

Mr. HOLTERMANN: I would be inclined to think so.

Mr. MCEVOY: If the brood chamber were full of brood and you put on sections pretty well drawn out, and put a frame on top of that with syrup, at a time when they would carry it down ten or twelve pounds at a night, I do not know but what they could make sugar pay.

Mr. PRINGLE: I think it is inconsistent, not to say wrong, for any man in this Association who condemns the production of sugar-honey to instruct the people how to make it.

Mr. FRITH: The paper will show to the people that they need not run away with the idea that we are adulterating comb-honey, because it would not pay.

Moved by Mr. PICKET, seconded by Mr. FRITH, that the best thanks of this Association be tendered Mr. Taylor for his paper. Carried.

Mr. DARLING: There was one sentiment in that paper which I thought was rich, and that is, "What is the use of wasting our time on these experiments that are doing us no good, and not doing something practical?"

Mr. F. A. GEMMELL, Stratford: I had an experiment last winter. I had an article in the *Bee Journal* with regard to it. I would like to have it discussed. I had some

fiv e colonies last winter that had no ventilation on top, and they were the best colonies I had in the yard last spring. You will understand that the colonies and hives were ne ver allowed to be completely covered with snow at any time.

Mr. PETTIT: Mr. Gemmell is right, but I want to emphasize this point, that it depe nds upon having plenty of bottom ventilation, if you fail in that you fail entirely; the whole thing is up. Last year I experimented with seven different colonies. In the first place there is a vertical entrance. You can keep a vertical entrance open very much better than you can a horizontal entrance, and that vertical entrance is made in a box that sets under the hive, not in the hive. These boxes were three inches deep and there were two vertical entrances the whole depth of that front, pretty well towards the corner of the hive; each of them three inches from the centre. These vertical entrances were three eights of an inch, and that would be quite sufficient if they would stay open, but lest they might get partly choked, the boxes had around the sides other holes for ventilation, two inches by three-eights. One in the south and one in the east and west. Now you will see, taking these together, it makes a lot of ventilation, and that was a great success. It is a great factor in wintering outdoor hives to let the bees have plenty of air from the bottom, and then they do not want any above. I say they are better without it. These openings around the hive were covered with straw six inches deep, held there by binder twine wound around the hive. That keeps the snow away and insures them being open all winter. The bees come through in fine shape. They were not completely covered with snow. The top of the hive had about six inches of packing on it. This straw that I spoke of being around the sides came up to the top of the hive and came out about six inches above, and then there were chaff cushions on top of them. There was six inches of packing on top.

A MEMBER: What did you have between the packing and the bees?

Mr. PETTIT: A cloth and no board.

Mr. MCEVOY: I went over Mr. Gemmell's paper in the *Journal*, and I read it over and over. The entrance that he gave was the full width of the hive. With such an entrance it would be dangerous to give upward ventilation, because it is actually giving too much ventilation at the bottom. I hold that about two and a half to three in width, and about five-tenths or three-eights in height is safe, and in case of snow storms you must have a sort of safety-valve. If you do not, the boiler will burst, so to speak. The snow will settle down, and it will steam up. But it you have the entrance as wide as he has it, and give upward ventilation, it will cause the colony to suffer.

Mr. PRINGLE: This subject was discussed last winter pretty fully. Some took the position that there ought to be a little upward ventilation, but that it would not do to seal them tight on the top. I said they could be hermetically sealed at the top if you are careful of the lower ventilation, and see that they do not get choked up. But if you have them hermetically sealed at the top, and you neglect them during a snow-storm, you are apt to lose them. You must attend to the ventilation at the bottom, during heavy snow-storms, or you will lose your bees.

Mr. GEMMELL: The old theory was that you could not winter bees at all, unless you had upward ventilation, but I think in a great many cases they were never protected then as we protect them now with packing. In regard to a space between the hive proper, and the outside cover, is that detrimental or a benefit to the colony? Now, if we want solar heat, the heat from the sun is a great benefit, and if you have an air space between the hive proper, and the outside case, you are going to destroy the benefits of the solar heat from the top of that hive, it is something like what you might call a tight air space, a non-conductor of heat. Now, then, if we can secure good wintering without an air space on top of the hive proper on the outside case, cannot we use less packing and get the benefits of the solar heat, by allowing some to strike on the hive and penetrate into the colony?

Mr. PRINGLE: Solar heat is so irregular that I do not think it would be well to depend on that.

Mr. GEMMELL: Do you not think we have two or three times in the winter when solar heat would be a benefit to the bees?

Mr. HALL: I am sorry that he is not satisfied when he is well off. He wintered his bees last winter a little contrary to what he did in the past. He says he was successful; do be satisfied with success. I have not tried Mr. Hedden's theory. He is a bright bee-keeper, but he is like my friend. He is not satisfied with success. I have bees seven miles from home that are exposed to the sun, and they are also exposed to ten degrees below zero, and that frost lasts longer than the sun does, and I certainly take the non-conductor to keep that frost out, and we will take the heat of the bees to get up the solar part of it. Last winter these bees were covered after a big storm, and I was not feeling well enough to dig them out, and I have what I call yards or drop boards to save me the trouble of cutting the grass, and those hives that were snowed up the worst had wells dug in front of them about twenty inches by thirty-three or thirty-six, and I laid the board on top of this well, and I did not do any more to them. One of the hives was queenless, and was lost, but the six were equal to any in the yard, and three of them the best. There was no top ventilation, and there was a space at the front about four and a half inches to five. The mice are at liberty to go in, but they do not go inside my hives. These hives did so well that if my hives become covered with snow again, I will go out and give each one a well, because my experience of last year was so successful.

Mr. FRITH: This solar heat theory is discussed all over the Province, especially in individual minds. Mr. Hedden, I believe, has the credit of starting this theory, but we must remember that Mr. Hedden lives in a different section of this hemisphere to what we do; where we are living we get one sunshiny day in twenty, from sometime in the beginning of December, to the end or middle of February. Where Mr. Hedden lives, I think he gets about seven sunshiny days in a month. In the eastern part of this Province, down where Mr. Brown lives, they get eight or nine sunshiny days, but all through this section we simply get about one sunshiny day in twenty; so that it would be very uncertain for us to depend upon solar heat. I have carried on a great many experiments in this line, and I find where you winter out doors the better way is to keep out the frost. I have come to this conclusion, that the bees require so much oxygen during the winter, that it makes very little difference as long as you do not put the draft right into the cluster of bees. It makes very little difference whether you get the oxygen from the top of the hive or the bottom or the sides.

Mr. GEMMELL: What about the moisture?

Mr. FRITH: They must have sufficient dry atmosphere to carry off the moisture, and if you know just how many cubic feet of air per day it will take to carry off the moisture and supply the bees with oxygen, it makes very little difference where they get it from.

Mr. PRINGLE: If you intend to ventilate by calculating the amount of oxygen that will enter during any given time you will make a great mistake, because three times the amount of oxygen will enter the same entrance at one time than will at another.

Mr. MCEVOY: One of the main things in wintering is to keep the constitution of the hive itself right; that is to have the heart of the hive pretty well packed with sealed stores at the beginning of the winter, the bees crowded by a division board. Thus the queen bee has not a chance to lay, and the bees are at rest, and the more rest they get the better they will winter. You can give ventilation more or less according to these conditions. If you have a hive with the centre pretty well consumed and the honey is to the wall, give a large entrance to that colony; and if in the winter there are a good many sunshiny days, and the queen is young and she sets to laying, the cluster is broken and the colony will be worthless the next summer.

Mr. HALL: What do you mean by the constitution? Do you mean a large lot of bees, or do you mean a hive half full of bees, or do you mean a hive where the bees cover three combs?

Mr. PRINGLE: How far apart?

Mr. McEVOY: Just space enough so that the bees can go up and down, a reasonable bee space.

Mr. HALL: I only see my bees from home once in the winter, and I find that if they have sufficient stores it makes no difference whether there are three combs or eight. If the entrance is not clogged they come through all right. I find that if there is insufficient bees they are prone to be weak in the spring, and I find if the hive is covered with bees from top to bottom, and corner to corner they are not going to live.

Mr. McEVOY: I agree with what Mr. Hall says with regard to a weak colony or a strong one; it may be filled from corner to corner and empty in the centre, and with a young queen they might start brood rearing. The way to get around that is to remove these combs and put in division boards, and by shutting the queen off she has no chance to lay, and the colony can be put in shape so that it will winter. I winter out doors, and I will guarantee that if the stores are right, and they are all sealed, unless you lose the queen, if you look out for snow-storms you will bring the colony through every time.

Mr. BEST: I have had them drifted up with snow considerably, and thought that surely they were dead, and I looked for the bees to be dead, but they came out better than some of those that were not snowed up. I suppose they received air through the snow, I took the snow away as soon as I could conveniently. I admire Mr. Gemmell's idea of bee-keeping. He is trying new things. It may not be very profitable for the experimenter, but it may sometimes be for others, if he happens on a good thing, and I think we ought to encourage him.

A MEMBER: Will Mr. Hall give us his method of wintering bees?

Mr. HALL: Mr. Gemmell tried an experiment last winter, and I say let old Sol do as he likes, we will keep the heat that we have got, and do as Mr. Gemmell does with the packing. We have a space between the packing on the top of the hive proper. The only difference between Mr. Gemmell's packing and mine is, he has got a beautiful case that the water cannot get in, neither can moisture get up; and in my case you can put your fist throught the sides of some of them, but the tops are perfectly water tight, there is sufficient air spaces betweeen the leaves to keep in the heat and to keep out the cold. I give mine a larger entrance and give them no top ventilation whatever, and, except they are buried under the snow and left there, they come out good.

Mr. EVANS: I would like to ask what is the best kind of packing?

Mr. McEVOY: Leaves; I have been trying sawdust, but it is no good.

Mr. GEMMELL: If you use sawdust with Mr. Hall's case you won't succeed, but if you use leaves, there is a certain amount of air that will circulate through the leaves, and they will dry out, if they happen to get wet.

Mr. ARMSTRONG: Our mode of wintering is much the same, with the exception that you cannot get your fist through the side of my outside cases. My cases are made out of rough lumber, but they are bevelled on the side, so that the water will not run in. I use sawdust, and I have a little upward ventiliation.

Mr. HALL: In the case of sawdust or chaff, you require a case to keep out the water.

Mr. ARMSTRONG: What depth of packing have you on top, and on the sides?

Mr. HALL: The sides three and one-half inches, and six inches on top. I have a cover that I lay on top, and that holds the leaves down solid. The main thing I have to contend with is the water from the melted snow or rain. That is only from the top; I do not care about the sides.

Mr. ARMSTRONG: You are not careful at all about having any spaces between the leaves and packing on the top of the hive.

Mr. McEVOY: Would it be desirable to have no packing whatever, or less packing on the front of the hive, or south side.

Mr. GEMMELL: I think I would have a little packing. I do not think it is essential to have much on the south side.

Mr. MCEVOY: I have experimented on that line. The south side wants to be a little less. If the distance is too thick the heat of the day has gone past before the colony is warmed up right.

Mr. PICKET: It is a question whether the solar heat is any benefit or not, unless it is sufficiently strong to induce the bees to have a fly; if it is only sufficient to cause a commotion, and cause the breaking of the cluster, it strikes me that solar heat is rather detrimental than otherwise.

Mr. GEMMELL: I am trying a little of it this winter.

Mr. HEISE: I understand that it will be necessary to have a committee to wait upon the Government to secure an increase of grant, and I therefore move that Mr. Holtermann and Mr. Picket be recommended for that purpose.

Mr. PICKET: I prefer that we get along without it. If it is an absolute necessity, then perhaps we had better appoint a committee.

Mr. EVANS: The committee might ask the Government to make that $650 grant the regular grant.

Mr. PICKET: I think this additional grant will be forthcoming. In case it is not, they can communicate with the Minister of Agriculture and find out whether it is an established fact or not. As I understand it, we expect it as a matter of course.

Mr. HOLTERMANN: It might not be necessary to go to Toronto at all, but the way the matter stands at present, I know that the idea was that the $150 would be for that year, and was only put in the supplementary estimates.

Mr. FRITH: I think $650 ought to be the regular thing. I think we are entitled to it.

Mr. DARLING: As I see the state of our finances now, I think we need not be ashamed of our past years' records. And I do not see how we can give our local associations anywhere near the $20 we are supposed to give them unless we have an increase of grant from the Government. The motion was carried.

Moved by Mr. PETTIT, seconded by Mr. PRINGLE, that Dr. Mills be the director of this Association to represent the Ontario Agricultural College staff. Carried.

Moved by Mr. HALL, seconded by Mr. HEISE, that the best thanks of this Association be tendered to the citizens of Brantford, the Mayor, and to the hotels, for the accommodation they had given, and to the "Telephone City Quartette," and the press. Carried.

BREAKING CLUSTER.

Mr. PETTIT: I would like to ask the question, do bees that winter right in the cellar, break cluster?

Mr. PRINGLE: They do when the time comes for breeding, towards spring. Until that time comes, if the conditions are right, and they are wintering properly, the clusters won't be broken. They have to get food occasionally, but it does not mean to break cluster in your sense.

Mr. PETTIT: It has been suggested that they do break cluster and clean up house and change their stores. I used to have that idea, but I have been watching them for two winters, and I have come to the conclusion that bees that are wintered right do not break cluster till they are set out. I go into my cellar twice a week, take a light, lift the hive from the bottom board, and I find it in the same situation for weeks, and weeks, and weeks, and I never found them to break cluster so as to be scattered

around on the frames. How is it that you find dirt dragged out and dead bees dragged out? My present impression is that just a few bees do that work, and the rest lie perfectly quiet. I believe, from my observation, that when you find bees scattered, they are not just right; they are breeding and taking harm.

Mr. PRINGLE: There is one thing that I cannot agree with you in. Of course it may be different in your locality. You say you do not expect them to breed before you set them out. That would not answer my case. I do not set mine out sometimes until the last of April. I have set some out on the 16th of May. There is no time between that and the honey harvest to breed. If I find the colony do not require setting out, if the weather is unfavorable, I leave some in very late. I have begun setting out bees about the 10th of April, and have extended it on up to the 16th of May.

A MEMBER: I would like to know from those who winter in the cellar and also out of doors, which they prefer, and a few reasons for their preference?

Mr. HALL: My views for the last five years have been that the cluster stay about as it is, when it gets nicely settled down, after being two or three days in the cellar, until February, and then that cluster does not scatter all over the hive, but keeps growing and growing. Those that were only medium, perhaps, touch the bottom board with three frames. Before the end of March they touch the five or six frames. I can account for this only by their starting brood rearing and extending the number, and therefore they have to extend the cluster. I believe they stay in the cluster. They have no occasion to move, except those that want to die. My furnace is in my cellar, and I have to go down once a day to attend to that, and in the evening it is very tempting to go down in the bee cellar and listen, and I always hear this contented hum. When February comes the colony begins to grow, and keeps growing till March. As far as keeping them in until the 16th of May, I have kept them in until the 2nd of May, which was a mistake. Two years ago I put out some twenty hives on the 1st of March, and the reason I did not put out more was because it turned out too cold, and they could not fly. They did not fly again for some time, as the thermometer went down to ten below zero. Those bees were in hives one-half inch thick, with no protection whatever, and they were the best bees in the apiary when the honey season commenced.

Mr. FRITH: Have any of you been in Mr. Hall's cellar? If not, you had better take the train with Mr. Hall to see the bees. You will never get as clear an impression as you would if you had just come over and seen them.

Mr. PETTIT: I want to re-assert that every hive of bees that winter as they should winter do not make a noise, and when they begin to make a noise there is something a little off.

Mr. HALL: He is perfectly right. Those that have no music in their soul cannot appeciate the tune. There was a gentleman in my cellar this winter, and I said: "Listen to this hive. Do you hear something?" He said: "Yes, I hear something. Just as if it was wind in the trees a long way off." He could hear it, but others could not.

Mr. HOLTERMANN: I think I winter my bees pretty well, as a rule. Mr. Couse and I were up to the house last night and saw the way the bees clustered, and what was on the cellar floor. I followed as closely as I could Mr. Pettit's method of wintering, and I have been in Mr. Pettit's cellar, and last year towards spring I thought I would slip up and see how he wintered his bees, and the way the slats were laid on the cellar floor, and there were very few dead bees. I think Mr. Pettit wintered his bees a little better than I did. Mr. Pettit said, "Do you hear the hum?" I replied, "I do." "Oh, yes," he said, "it is coming near spring."

Mr. DARLING: I want to say this with regard to that contented hum. I have heard Mr. Hall and Mr. Pettit, and I have read Mr. Doolittle's article. I believe Mr. Hall is correct. I do not bring my bees out in the spring just as I would like to. My cellar is dry; the air is pure and clean. I go into my cellar and I put my ear to the hive, but I can hear nothing; but by and by I come to a hive and can hear a little sound. I have a

hundred and forty stocks of bees in the cellar now. I never expect to see the day when I will have one hundred and forty stocks and they will all be quiet at once. I will go down to the cellar another time and hear another hive that was making no noise the day before. Part of the time they are making a noise and part of the time they are not.

A MEMBER: I go into my cellar often, and, as Mr. Darling has said, I have never yet been able to get them in all parts of the cellar quiet; but where I find the noise this week I do not find it next week. I find it right along. There is something in the circulation of the air. Those that are in the most favorable position in the cellar are the ones I find are still.

Mr. COUSE: At a former part of our meeting there was some discussion in regard to approaching the Government, or having our Dominion Government take some steps to export honey to the old country to what they call their produce stations. I believe a resolution from this Association would have some effect in having this done, and I think right now it might be shortly discusssed, and a resolution passed to have them to do so; and if you think fit to have a committee appointed to write them or see them, or in some other way approach them, it would be a good thing.

Mr. PETTIT: I will second that, and I think it is of much importance, because I noticed in the press a short time ago that a leading bee-keeper had a thousand tons on hand. (Great laughter.)

Mr. HALL: It will do no harm if this Association asked the Canadian Government to include in its exhibits, Canadian honey.

Mr. HOLTERMANN: The Ontario Government is sending comb and extracted honey to the Imperial Institute. This is a Dominion matter, and those who followed the question will know that the present Minister of Agriculture proposes sending slaughtered animals over in cold storage, and depots are to be established in different parts of Great Britain in which this meat is to be sold. Prof. Robertson told me they purposed handling this meat in May, and that he could not undertake to handle any other product for two or three months. I tried to get a definite promise out of Prof. Robertson, and he said he would not make any definite promise, and I think a resolution from this Association would add weight. The motion was carried.

IN MEMORIAM: SAMUEL CORNEIL.

Moved by M. B. HOLMES, and seconded by R. H. SMITH, That the Ontario Bee-keepers' Association desire to place on record their sincere regret at the sad death of Samuel Corneil, of Lindsay, the honored Secretary of this Association. During the many years which he has served as an officer of this Association he has by his uniform courtesy gained the highest respect and universal friendship not only of the entire community where he resided, but of the bee-keepers throughout the whole Dominion. Questions affecting the honey industry have at all times received his active and intelligent consideration, and his mature judgment, joined to many years of practical experience, has been of great value to Ontario. We, his colleagues, feel keenly the severing of the link that has so long bound us in true and loyal friendship; therefore, be it resolved that our heartfelt sympathy and condolence are hereby extended to the widow and family of our late colleague in their great bereavement, and we trust that amid their grief they may be sustained by the promise of Him who has said, "I will be a husband to the widow and a father to the fatherless"; and further, that this resolution be recorded on the minutes, and an engrossed copy signed by the President and Secretary be sent to the widow and family of the late Samuel Corneil. The motion carried.

DIRECTORS' MEETING.

Following the annual meeting a meeting of the Directors was held at the Belmont Hotel at which the following business was transacted :

W. Couse was re-appointed Secretary of the Association, and Martin Emigh was re-appointed Treasurer.

There was an appropriation of $200 for the affiliated societies, and it was decided that no society shall receive more than twenty dollars.

The President, Mr. Gemmell and Mr. Picket were appointed an Executive Committee.

Grants of twenty-five dollars and ten dollars were made to the Toronto Industrial Association and the Western Fair Association respectively.

It was decided to give *The Canadian Bee Journal* to the members of the Association this year, as last, as a bonus for their membership fee.

Messrs. Darling, Couse and Holmes were appointed a Committee to amend the by-laws and submit them to the Minister of Agriculture for his approval.

Mr. W. J. Brown brought up the matter of their being a considerable quantity of adulterated honey in the groceries in his section of the country which was spoiling the sale of his honey.

The Board advised Mr. Brown to bring the matter before his County Crown Attorney, and ask him to prosecute the parties offering for sale and selling such adulterated honey ; and in the event of his refusal to act in the premises, this Association would assist Mr. Brown to prosecute, financially or otherwise, as might be deemed best. This matter was left in the hands of the Executive.

The date of the next annual meeting will be decided by the Executive.

W. Couse,
Secretary.

AFFILIATED SOCIETIES' REPORT.

There are thirteen societies in affiliation, all of which have reported, each sending in audited financial report with one exception.

The grants from the Ontario Bee-keepers' Association have been expended to a great extent for literature and prizes for honey at agricultural fairs, but a few societies have not given prizes for honey owing to the crop being a total failure in their district. For this reason they held a larger amount of the grant than they would had the season been more favourable.

With few exceptions, the societies report no honey and no increase in bees, and some report that it was necessary to feed to a great extent to have their bees in condition to winter. The counties in the east have the most favourable reports. The reports are being received in better form than previously, but there is still room for improvement.

W. Couse,
Secretary.

ANNUAL REPORTS

OF THE

POULTRY AND PET STOCK ASSOCIATIONS

OF THE

PROVINCE OF ONTARIO

1895.

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1896

ANNUAL REPORT

OF THE

POULTRY ASSOCIATION OF ONTARIO.

1895.

To the Honorable the Minister of Agriculture:

SIR,—I have the honor to submit herewith the Twenty-Second Annual Report of the Poultry Association of Ontario.

Yours very truly,

THOS. A. BROWNE,
Secretary.

POULTRY ASSOCIATION OF ONTARIO.

OFFICERS FOR 1896.

President	Thomas Gowdy	Guelph.
1st Vice-President	Allan Bogue	London.
2nd Vice-President	Henry White	Port Hope.
Treasurer	Geo. G. McCormick	London.
Secretary	Thos. A. Browne	London.
Auditors	H. B. Donovan	Toronto.
	Thos. A. Duff	Toronto.

Board of Directors :

District No. 5	D. C. Trew	Lindsay.
" No. 6	Wm. Barber	Toronto.
" No. 7	T. J. Senior	Hamilton.
" No. 8	M. T. Burn	Tilsonburg.
" No. 9	T. H. Scott	St. Thomas.
" No. 10	Thos. Rice	Whitby.
" No. 11	Wm. McNeil	London.
" No. 12	Ed. Donnelly	Windsor.
" No. 13	W. J. Bell	Angus.

Delegates to Industrial Exhibition, Toronto	Jos. Dilworth	Toronto
	Thos. A. Duff	Toronto.
Delegates to Western Fair, London	J. H. Saunders	London.
	Geo. G. McCormick	London.
Delegates to Central Fair, Hamilton	Rev. Thos. Geoghegan.	Hamilton.
	John Cole	Hamilton.

LIST OF MEMBERS FOR 1896.

Name.	Post Office.	Breeds Exhibited.
Allan, R. C.	Cobourg	S. C. White Leghorns, Houdans and large eggs.
Bogue, Geo.	Strathroy	Light Brahmas, White Plymouth Rocks, Silver, Black, and White Wyandottes, Dominiques and Ducks.
Buckle, James	Port Hope	White Wyandottes.
Bogue, Allan	London	Partridge Cochins, all varieties of Hamburgs and Dorkings, Houdans and all varieties of Polands and Tolouse Geese, and all varieties of Ducks
Baulch, J. H.	Port Hope	White Plymouth Rocks, several varieties of Pigeons.
Brown, F. H.	Port Hope	Buff Plymouth Rocks, Golden and Buff Wyandottes, Buff Leghorns, Red Caps.
Barber, Wm	Toronto	All varieties of Games and Game Bantams.
Bell, W. J.	Angus	Silver Wyandottes, R. C. White Leghorns, and Bronze Turkeys.
Burt, T. F.	Port Hope	White Plymouth Rocks and Indian Game.
Brown, Alf.	Picton	White and Buff Plymouth Rocks, S. C. White Leghorns, Silver Grey Dorkings, White Javas.
Betzner, J. A.	West Flamboro'	Barred Plymouth Rocks.
Buckle, G. A.	Port Hope	Pigeons, many varieties.
Bennett, J. E.	Toronto	Barred Plymouth Rocks.
Clarke, Jas. T.	Cobourg	Golden Spangled and Silver Spangled Hamburgs.
Cole, John	Hamilton	Light Brahmas, Indian Game, Buff Leghorns.
Corcoran, J. L.	Toronto	Silver Grey Dorkings, Black Spanish and cross breeds.
Cosh, Newton	Woodstock	Andalusians.
Dunn, G. J.	Hamilton	Pigeons, several varieties.
Donovan, H. B.	Toronto	Cochin and Polish Bantams, and a very large assortment of Pigeons and Rabbits.
Daniels, C. J.	Toronto	White and Buff Plymouth Rocks, Indian Game, Pekin and Japanese Bantams, Black Langshans, Golden Wyandottes, Black and Buff Leghorns, Andalusians, White and Black Javas, White and Black Minorcas, Red Caps, Silkies.
Duff, Thos. A.	Toronto	Barred Plymouth Rocks, White and Black Minorcas.
Dounham, Geo.	Wisbeach	Black Leghorns.
Dorst, Jacob	Toronto	Silver Wyandottes.
Dundas, Jas	Deer Park	Buff Leghorns and Black Minorcas.
Dustan, W. H.	Bowmanville	Andalusians.
Essex, Robt. H.	Toronto	Buff Plymouth Rocks, Golden Wyandottes, Black Hamburgs.
Fairbanks, C.	Cobourg	Barred Plymouth Rocks.
Field, Fred.	Cobourg	Black Red Game, Buff Wyandottes, Golden Polands.
Ford, John	Toronto	Black Minorcas.
Fraser, Alex.	New Hamburg	Black Spanish.
Fox, Wm.	Toronto	Rabbits of all kinds.
Garfat, Fred A.	Port Hope	Red Caps and large eggs.
Gibbard, W. T.	Napanee	Light Brahmas, White Cochins, Barred Plymouth Rocks, Indian Game, Black Red Bantams, White R. C. Bantams, Houdans.
Gowman & Hortop	St. Thomas	Games.
Glidden, W. L.	Port Hope	Pigeons—Pouters of all kinds.
Geoghegan, Rev. Thos.	Hamilton	Black Red Game.
Glendinning, C.	London	R. C. Brown Leghorns.
Graham, A. W.	St. Thomas	Golden Wyandottes, S. C. White Leghorns.
Haven, Geo. W.	Toronto	Black Minorcas.
Horsford, G. S.	Port Hope	Buff Leghorns.
Hobart, Sidney	Cobourg	Indian Game and all Single Comb varieties of Leghorns.
Hodge, James	Port Hope	S. C. White Leghorns, Golden and White Wyandottes
Hare, F. C.	Whitby	Black Spanish.
Haw, Geo. L.	Port Hope	Black-Tailed Japanese Bantams.
Hayden, Jno. D.	Cobourg	Black Spanish.
Henrich, H. M.	New Hamburg	Black Javas.
Kirby, Stephen	Woodstock	White and Buff Plymouth Rocks, White and Buff Wyandottes, Black Langshans, S. C. Brown Leghorns, Andalusians.

LIST OF MEMBERS.—*Concluded.*

Name.	Post Office.	Breeds Exhibited.
Knight & Osborne	Bowmanville	Black Javas, cross breeds, Geese and Ducks.
Keiley, T. J.	London	Buff Plymouth Rocks, Black Wyandottes, R. C. White Leghorns.
Laird, H. W.	Cobourg	Golden and Silver Wyandottes, R. C. White Leghorns.
Lawrie, John	Malvern	Colored Dorkings and Pekin Ducks.
Lake, Arthur H.	Toronto	S. C. Brown Leghorns.
Lenton, James	Oshawa	Golden and Silver Wyandottes.
Massie, Chas	Port Hope	White Wyandottes and a large variety of Pigeons.
Margach, J. L.	Port Hope	Silver Wyandottes, S. C. Brown Leghorns.
Main, Wm.	Milton, West	Black Red Game, Bronze Turkeys, Bremen Geese and Rouen Ducks.
Matson, F. J.	Toronto	Red Caps.
Magill, J. H.	Port Hope	Golden Wyandottes and Pigeons.
allory, Dr. A. C.	Colborne	White Wyandottes, S. C. Brown Leghorns, Light Brahmas.
Morrow, John	Colborne	S. C. White Leghorns.
McNeil, Wm.	London	White Cochins, every variety of Bantams, Hamburgs and Polands.
McCormick, Geo. G.	London	Buff and Black Cochins, White Wyandottes, and Black Javas.
McGaw, W. H.	Hamilton	Light Brahmas, S. C. Brown Leghorns, and Ducks.
McCurdy, Robt.	London	Black Langshans.
McLoud, Wm.	London	Barred Plymouth Rocks.
Niven, Dr. J. S.	London	Red Caps and Golden and Silver Pheasants.
Noden, A.	Toronto	Silver Grey Dorkings.
Oldrieve & Wilkinson	Kingston	Houdans, Light Brahmas, White and Barred Plymouth Rocks, all varieties of Games and Dominiques, Game Bantams, Black and White Langshans, White Wyandottes, R. C. Brown Leghorns, Red Caps.
Oke, Richard	London	Partridge Cochins, all varieties of Bantams, Golden Wyandottes, every variety of Hamburgs, Creve Cœurs, La Fleche and Pheasants.
Pequegnat, L. G.	New Hamburg	Partridge Cochins and Brown Red Game.
Parsons, James	Osaca	White Wyandottes, cross breeds, and large eggs.
Rice, Thos.	Whitby	White Plymouth Rocks and S. C. White and S. C. Brown Leghorns.
Reid, W. H.	Kingston	Silver, Sebright and Pekin Bantams, R. C. White Leghorns, Black Hamburgs, Colored Dorkings, Turkeys, Geese. Ducks and Pigeons.
Stockwell, C.	London	Houdans.
Scott, I. H.	St. Thomas	Black Langshans.
Sinclair, R.	Kingston	R. C. White Leghorns, Silver Spangled Hamburgs.
Scott, Robt.	London	White Plymouth Rocks, Black Langshans, R. C. Brown and Black Leghorns.
Shaw, Ben.	Toronto	Indian Game.
Saunders, J. H.	London	Dark Brahmas.
Topley, Jas.	Port Hope	Black Minorcas.
Trew, D. C.	Lindsay	Barred Plymouth Rocks, Pekin Bantams, S. C. White Leghorns, Houdans.
Thorpe & Scott	London	Dark Brahmas.
Troth, Ferdinand	Toronto	Duckwing and Pyle Game.
Wilkes, G. H.	Toronto	S. C. White Leghorns.
Walker Bros.	Port Hope	W. C. B. Polands.
Wilson, J. R.	Oshawa	S. C. Brown Leghorns.
Wagner, C. F.	Toronto	Buff Leghorns.
Walker, H. H.	Port Hope	Buff Plymouth Rocks, Silver Wyandottes.
Wyatt, Ed.	London	Buff and White Cochins.
Burn, M. T.	Tilsonburg	Did not show this year.
Dilworth, Jos.	Toronto	
Donnelly, Ed.	Windsor	
Jarvis, L. G.	Guelph	
Gowdy, Thos.	Guelph	
Patton, J. H.	Toronto	
Senior, T. J.	Hamilton	
White, Henry	Port Hope	

TWENTY-SECOND ANNUAL MEETING

OF THE

ONTARIO POULTRY ASSOCIATION.

1895.

The twenty-second annual meeting of the Ontario Poultry Association was held in the Council Chamber, Port Hope, on Thursday afternoon, January 9th, 1896.

At two o'clock the President, Mr. H. WHITE, of Port Hope, took the chair, and called the meeting to order.

The Secretary, Mr. T. A. BROWNE, of London, then read the minutes of the last annual meeting, and the intervening meetings of the Board of Directors.

Moved by Mr. A. BOGUE, seconded by Mr. W. J. BELL, that the minutes as now read, be adopted. Carried.

THE PRESIDENT'S ADDRESS.

Mr. WHITE then delivered the following address: I am sure you will bear with me for a short time, while I endeavor to place before you a few matters for your consideration. But first allow me to give a most hearty welcome to this town to the members of the Poultry Association of Ontario, in this their annual visit. No place better than Port Hope can appreciate such an honor. Here we have an Association which, though young in years, makes up for whatever else may be lacking, in its enthusiasm. Therefore, as one of the members of that Association, as well as your President, I have great pleasure in welcoming you on this occasion. We feel that in holding your exhibition here this year, you have conferred a great boon, not only upon the local Association, but also upon those sections of the surrounding country, where such shows have been few in number, and not very successful. As far as the present exhibition is concerned, you will all agree with me as to its success. Old exhibitors have freely expressed their approval of the arrangements, and gratification at the show that has been made here. These are matters for earnest congratulation. I would like here to point out three factors, which have, in my opinion, contributed to this end.

The first, and probably the most important factor in connection with the success of the show, is the new coops. You will, I think, all agree with me that no such single improvement has occurred as in the providing of these new coops. They have not only added to the attractiveness of the exhibition, but greatly facilitated the judging, which was a task of considerale magnitude under the old system. The Association is much indebted to the Hon. the Minister of Agriculture, and the members of the Ontario Government, for their kindness and liberality in voting such a large sum of money for these coops; and I trust some tangible expression of our gratitude will be placed in the records before this meeting adjourns.

The next thing I would mention which has tended to the success of this exhibition is the thorough efficiency of the Secretary of this Association. (Applause.) Anyone who has occupied the President's chair will realize more fully how much this Association is indebted to the energetic services of its Secretary. I need not dilate upon this point, for you all recognize his ability as well as I do; but speaking for myself I know of no organization that has a more efficient Secretary than the Ontario Poultry Association. I would like further to say that if the funds of the Association will allow of such being done, a grant should be made to increase the salary of Mr. Browne. I am satisfied the remuneration he receives is in no way commensurate with the work he has done, and has yet to do. I leave the matter in your hands; but I felt that I could not allow this opportunity to pass without showing to you the great discrepancy between the work done and the remuneration given.

The third point to which I wish to allude is the superintendency of the work in arranging for this show. So far as the superintendent's work is concerned, it has been done most loyally by a man who has the interests of poultry at heart. I can say from my own knowledge that the instructions our superintendent received from the Secretary were carried out literally. One and the only answer to any suggestion that might be made to have a thing done any differently from what it was being done was this: "Mr. Browne wrote me that it was to be done this way, and that settles it." (Laughter and applause.)

I would like to point out one or two things in connection with the Statute. As no doubt you are all aware, considerable changes have been made in the Statute regarding the Agriculture and Arts Association, at the last meeting of the Legislature. Under that Act one change that has been made has reference to the holding of the annual show. A clause in that statute provides that so long as this Association receives a grant from the Government, so long shall it be imperative that no exhibition be held at any one place or within forty miles of one place, for two years in succession. The Electoral Divisions have also been altered, and in place of the old system of selecting directors, these officers must be taken from certain localities. It would be almost impossible for this meeting to elect directors as it should be done, with any degree of satisfaction, and I would therefore throw out the suggestion that a nominating committee be appointed by you to select a board of directors, and report the names selected to this meeting for approval. The report of this committee would be open to amendment; but I trust that these who have amendments to offer will seriously consider them before putting them before the meeting; for it is desirable that this work be done amicable, and I hope no factious opposition will arise.

There is another suggestion I would like to throw out, and that is with regard to the storage of the new coops. Something will have to be done towards finding a permanent lodgment for these articles. I would like to impress it upon this meeting that those coops are solely the property of the Ontario Poultry Association. Although purchased with funds furnished by the Government, the money was given to the Association for a specific purpose. That purpose has been accomplished, and the coops are now our property, and it behooves the Association to find some resting place for them; and this meeting will be called upon to make some provision in this respect.

After inviting the members of the Association to an entertainment provided by the citizens of Port Hope in their behalf, to be held in the Opera House at 8 o'clock, the President closed his address by thanking those present for their patient attention, and for the honor they had conferred upon him is making him their President for the past year, and in selecting Port Hope as the place for their annual meeting.

REPORT OF THE TREASURER.

The Treasurer, Mr. GEO. G. MCCORMICK, read his report showing statement of receipts and disbursements of the Poultry Association of Ontario for the Exhibition of 1895, as follows:

Receipts.

Balance brought forward	$134 22
Entry fees—as per register	613 75
Membership fees	102 00
Government grant (discounted)	873 75
Special prizes donated	15 00
Interest from bank on deposits	6 73
	$1,745 45

Disbursements.

Prizes paid	$1,172 99
Judges' fees	125 00
New Hamburg Society (grant for expenses)	160 00
Secretary's salary	100 00
Advertiser Printing Co. account, printing	32 75
Reid Bros. & Co. account	50
Thos. A. Duff, stenographer	10 00
Postages, express, etc	15 99
Secretary's expenses to and at New Hamburg	4 30
Balance in bank	123 92
	$1,745 45

Audited and found correct, April 15th, 1895.

H. B. DONOVAN,
JOS. DILWORTH,
Auditors.

SECRETARY'S REPORT.

Mr. THOS. A. BROWNE, Secretary of the Association, being called upon for his report, said: Unfortunately I have been so busy that I have been unable to write out a report, but I purpose preparing statistics and other matter in time for the annual report to the Government. I will merely allude to a few things, and answer the questions that have been asked, and any that may be asked relating to the management of the Association's affairs.

In the first place let me return my most sincere thanks for the hearty manner in which you responded to the remarks of our worthy President in reference to myself. I assure you anything I have done for the Association has been a matter of pure love for the work, and my desire has always been to benefit the Association.

The President has very nicely covered the matter relating to the procuring of the coops, and I have nothing further to add, only to express my hearty appreciation of the manner in which we were treated in Toronto when we went to interview the Government in regard to these coops. After the matter had been explained to them they granted our request without any reluctance whatever, and in the warmest and heartiest manner. We asked for five hundred dollars, which was granted, and your committee so managed the expenditure that we have been able to furnish 612 coops and sufficient material to make a few more, for $454. We have also supplied you with little numbers at a cost of eighteen dollars, which, I think, are a great convenience.

Regarding the matter of prize ribbons, to which allusion has been made, I consulted each member of the Directorate in reference to it. I also made enquiries as to the cost

from the best firms engaged in the manufacture of such articles in Montreal and on the other side. I found that prize ribbons similar to those given by the American Association cost about twenty-seven cents each, and as we would require twelve hundred of them, I leave it to yourselves to say where we would get the money. I also ascertained that the cheapest ribbon we could procure would cost, when printed, four cents each, which means an expenditure of forty-eight dollars for ribbons. I may inform you that the whole printing for the Association is done for eighteen dollars,—prize cards, score cards and all. It is easy at a meeting of this kind to pass resolutions to do certain things, but it frequently happens that the ways and means are overlooked ; and so, when enquired into, I found that it would be impossible with the money at our disposal, to pay the amount necessary to procure those ribbons, and recommended to the Board not to purchase same. As far as I am personally concerned it would be a great deal easier for me to have the ribbons, for you can have no idea, unless from experience, of the time it takes to write out these cards. So that it is not a personal matter with me, but one of saving your own money. (Applause.)

Regarding Mr. Langdon, I may say that it gave me a great deal of pleasure when I received notice that he had been appointed superintendent, and I was perfectly satisfied that any work entrusted to him would be faithfully carried out. I may have seen the work as well, but I have never seen it better done than it has been done by Mr. Langdon. The instructions from me,—you could scarcely call them instructions, but suggestions would be a better word,—were carried out perfectly in every detail, and we had no trouble at all when we came here.

There is another matter to which I wish to allude, and one that is a source of annoyance and trouble. There are a few, and I may say only a few, who will insist on trying to get in late entries. At your last annual meeting you passed a resolution that entries should be closed upon a certain day, and I have carried out your instructions to the letter, and will do it every time, even should it be the President himself who wished me to break the rule. (Applause.) I may just allude to one instance : A gentleman who lives in this neighborhood came here the other day with a large number of exhibits in his sleigh. I never saw or knew anything about them until I came here the day of the opening of the show. It was, no doubt a great disappointment to him, but it was impossible for me to accept his entry then. I merely mention this that you may not look upon me as trying to make myself obnoxious to any one. I try to treat every one as I would like to be treated myself.

There is another motion on the books, and it was put there for a purpose. You know what we hold this meeting for. It is not merely to divide the prize money, or for our own personal pleasure or profit. It is for the purpose of educating ourselves and others and for the benefit of the country at large, in introducing them to an important industry; and I trust that the Directors have all complied with the resolution I refer to, and have come here prepared with essays that will be of interest and benefit to all.

We are again assembled, after the intervention of another year, and one cannot help noticing that some of the familiar faces of the past are absent, and their places filled by others whom some of us are meeting with for the first time. Let us, therefore, show them by our kindly actions towards them that we are pleased to have them here, and will be glad to have them always at our annual meetings.

It has been customary for me in the past to give you a synopsis of the entries in our show and compare it with the one last past. At New Hamburg, last year, I told you that the number of the specimens, 1,354, was the largest in the history of the Association, and here I will have to put it in another way and tell you that the number of exhibitors is the largest in our history. As shown by the last Government report the entries were composed of 977 fowls, 117 turkeys, geese and ducks, and 288 pigeons and pets. This year we will have to report a decrease of 108 specimens in the grand total, as follows : The number of fowls on exhibition here is 1,035, or fifty-eight in advance of New Hamburg, while the turkeys, geese, ducks and pigeons are only a little over one-half as many, viz., 239. No doubt the reason for this shortage in the heavy birds is

largely accounted for by the long distance they would have to come and the expense attached thereto, and Port Hope being a home for pigeon fanciers, the absent ones were, perhaps, a little afraid of the keen competition.

I am sure you must all be delighted with the arrangements made by the local Association for the reception of this exhibition and annual meeting, for I believe I am right in stating that upon no other occasion has it been our lot to occupy such a suitable building for our show as the present, the accommodation for this meeting being all that could be desired.

In closing I would say as one of the committee appointed to interview the Minister of Agriculture *re* coops, and later to purchase the same, I cannot but express a feeling of pride at our success in being able to furnish for the use of this Association coops better adapted for exhibition purposes than any other show in America; and I am sure that your committee listens with pleasure to your kindly expressions as to the success of their management.

I do not know that there is anything further I can say in regard to the Association. Personally I am much pleased with the way I have been treated by you all, from the President down, and I can only say it is a pleasure to work for such a body of men. If I have in any way worried or appeared harsh to anybody, it has been on account of the great pressure of work. You who have never been there do not know what it is to have fifty or sixty people all wanting to know something from you at the same time. If I have appeared a little short on occasions with my answers, it has all been done with the best intentions, and with no desire to offend any one. (Applause.)

On motion of Mr. D. C. Trew, seconded by Mr. Senior, the reports of the Secretary and the Treasurer were received and adopted.

The Secretary here read letters of regret from Hon. Jno. Dryden, Toronto, C. C. James, Toronto, and Mr. Clemo, and also from Dr. James Mills, President O. A. C., Guelph, on their inability to attend.

NEXT PLACE OF ANNUAL MEETING.

With reference to the next place for holding the annual meeting, Mr. Bogue spoke strongly in favor of Guelph.

Mr. McCormick said he would be pleased to see the next annual meeting in Guelph. He spoke of the fine exhibition now closing, and said he believed it was the most attractive show ever held by the Association. While on his feet he said he wished to allude to a matter that had been touched upon by the President, and that was, the Secretary's salary. In the first place the Secretary's salary was fixed at $75, and the Treasurer was allowed $25. When the Association secured the services of Mr. Browne, he concluded they had got the best man in Canada for the position, and in order to induce him to accept, suggested that the amount formerly voted to the Treasurer be added to that of the Secretary, making his salary one hundred dollars. Mr. McCormick considered even this small remuneration for the amount of work that had to be done, and thought some effort should be made to increase it.

The Secretary read a letter asking that the next annual meeting be held in Toronto.

The motion of Mr. Bogue, seconded by Mr. Rice, of Whitby, that the next annual meeting and exhibition be held in the city of Guelph, was carried.

ELECTION OF OFFICERS.

The election of officers was then proceeded with, resulting as given on page vi.

Mr. T. A. DUFF, of Toronto, asked if the Association was entitled to elect an Honorary President.

Mr. MCCORMICK thought not. It had only been done once.

ENCOURAGING FARMERS TO GO INTO POULTRY RAISING.

Mr. MCCORMICK said it had been suggested to him that something should be done by way of inducing farmers to go more extensively and systematically into the business of thoroughbred poultry raising, and also the exhibition of dressed poultry such as the samples up stairs, at the annual and local exhibitions and fairs. The farmers as a rule were practically shut out of the show. He believed that Mr. Bogue and himself were the only farmers belonging to the Association. The suggestion had been thrown out that the Government be asked to donate a sum for prizes to be given at the different agricultural fairs and shows held throughout the country, and also at the Toronto Industrial, and larger exhibitions, to be open to farmers only. In other words have two classes, one for the city and townsfolk who delight in fancy poultry, and the other for farmers, in order to encourage these latter to pay more attention to the raising of a better class of poultry. He noticed that Mr. Gilbert, Manager of Poultry at the Experimental Farm at Ottawa, was present, and the meeting would like to hear a few words from him on this subject.

MR. GILBERT'S ADDRESS.

Calls were made for Mr. GILBERT, who came forward and said: I would like to say a few words, but it must be understood that I am speaking only as a member of this Association, and not in my official capacity as Poultry Manager at the Experimental Farm at Ottawa. The subject just mooted by my esteemed friend, is one of great importance. Perhaps no one here has been more among farmers in the last twelve months than I have been. I have had the honor of addressing twenty-two meetings in different parts of the country, some of them attended by five hundred and six hundred people belonging to the farming class, and I have had an opportunity of hearing expressions from farmers on this subject. They say: while we are anxious to take part in these poultry shows, we cannot compete against such men as Messrs. Bogue, McCormick, McNeil and other prominent fanciers, for they have the finest birds in the Province. The farmer does not deny these gentlemen all the prizes they are entitled to, and give them credit for their enterprize, but they say: "Where do we come in? We farmers raise stock, but we have no chance of taking prizes against such competitors."

Now, it just occurs to me that the matter might be arranged in this way. Suppose the Dominion Government were to offer three sets of prizes of three different amounts, a first prize, say of $8, second of $5, and third of $3, or $6, $4, and $2; all three of these prizes to be for the best exhibition of thoroughbred poultry, hatched on the farm, and open to farmers only, who have never won a prize before for such stock, and who were not professional fanciers.

Suppose another set of three prizes were offered of $8, $5 and $3, or $6, $4, and $2, for the best specimen of thoroughbred poultry dressed, such as is displayed up-stairs. That would give the farmer a chance to show what he could do. It would also interest farmers' wives and daughters, and be a practical way of developing that line of industry.

Then a third set of prizes might be given for the best display of eggs, the choicest flavored and heaviest. All these prizes to be for the benefit of farmers only. I believe the Dominion Government could be induced to give these prizes to be competed for at town, township and county fairs. They might, in fact, place the money in the hands of this Association, or of the Toronto Industrial, or larger eastern and western shows. I think by voting a few thousand dollars in this way, the Dominion Government would be aiding this Association, which has done so much for the development of the poultry industry, not only in the Province of Ontario, but in the whole Dominion, to extend its usefulness.

While I am on my feet let me tell you that there is a great and increasing interest being taken by farmers in this line. I delivered two addresses at Pakenham, at meetings which were well attended. I alluded to the necessity of producing a superior quality of eggs for the summer market, and showed how they could get a superior flavored egg by keeping the male away from the hen. I showed them that most of the eggs brought to the market in summer were thoroughly unreliable. You pay twelve cents a dozen for them, and as a rule find about one-half of them bad, and the other half not by any means fresh laid or choice flavored. That represents twenty-four cents a dozen. No one, I told them, would object to sixteen or eighteen cents a dozen for eggs that were thoroughly reliable as to freshness and flavor. I also stated that, as a rule, farmers brought eggs into the market in summer, that they had not paid particular attention to collecting, and as a result the majority of them were bad. At the close of the meeting a farmer came to me and said: "You were talking about selling eggs in summer. Do you think I could get a market in Ottawa for a good egg?" He said he could only get store pay for what eggs he raised, and it was not a very satisfactory way of dealing. I told him if he came to Ottawa I would introduce him to a merchant who would take all the eggs that he would guarantee to be non-fertilized, and who would give him a good price for them. In a few days he came to the city with a lot, and I introduced him to the merchant. He told me afterward that this merchant paid him sixteen cents a dozen all summer for all the eggs he could bring him. Now, here was a farmer who, by simply keeping the rooster away from the hens, and bringing in non-fertilized eggs, got sixteen cents a dozen for them when his neighbors were selling for ten or twelve cents. I do not wish to occupy more of your time, but I feel strongly on this subject, and I am glad to see poultry associations taking it up and making it a subject for discussion at their farmers' meetings. I remember three or four years ago the Government asked for cold storage for eggs to the English market. I said, "Gentlemen, you are wrong. No subsequent treatment of a bad egg by cold storage will make it good. First, get a good egg and then by cold storage you can keep it intact." (Cheers.)

Mr. J. Bennett, of Toronto, said he had nothing against the farmer, but where, he asked, does the mechanic come in? Could you get a farmer to give five or ten dollars for a bird? No; it was the mechanic who did that, and then he must give the stock from that bird to the farmer for a dollar.

Mr. C. F. Wagner, of Toronto, asked Mr. Gilbert if he meant these prizes for thoroughbreds, or only half-bred birds.

The Chairman said for thoroughbreds, most certainly.

Mr. Browne said he had listened to the remarks of Mr. Gilbert with a great deal of pleasure, and the Association was much indebted to him for the way he treated them from year to year. He always gave them real practical talks, with no theorizing, and he trusted Mr. Gilbert would send them something fuller on this subject to embody in the annual report.

THE NEW COOPS.

The first miscellaneous business brought forward entailed a lengthy discussion regarding the new coops.

Dr. MALLORY said the matter of the new coops was one that should have been taken up while the representatives were all present. He thought some special provision should be made as to the storage of the coops, and also the question as to their future use should be considered. It ought to be understood perfectly that these coops were purchased at the expense of the Province for the express use of this Association. But the grant, he took it, was made to the Association as the special guardians of the interests of the poultry raisers of the Province, and not for the use of the Ontario Poultry Association alone; and there was no way in which the Association could better advance those interests than by a proper use of the new coops. It was a well known fact that there was no local association which owned such an excellent set of coops as these, and he did not think that after a few days of exhibition they should be put aside, and not see the light of day again until another annual exhibition came around. As he said before, there was no way where with so little means so vast an amount of good could be done to the poultry interests of the Province as by the aid of these coops. His suggestion was that the coops be sent to the Agricultural College at Guelph, which was a Provincial institution, and provision could be made there for their storage; and that all local poultry associations that would give proper guarantees for the care and speedy return of these coops should be entitled to the use of them. It was well known to all that one of the drawbacks to holding local exhibitions was the lack of coops. For his part he did not know of one that had coops at all presentable.

The SECRETARY replied that the Government did not look upon the coops in any such light as had been presented, for he had a letter from the Minister of Agriculture asking if the Association would loan the coops. It must be patent to all that if the Society once began to lend these coops, which were easily damaged, they would soon have no coops to lend. He did not think it would be wise to adopt the course suggested without a good deal of careful consideration. In his opinion the disposal of these coops should be left in the hands of the Board of Directors. There were few local associations but had their own coops.

Mr. WAGNER said a small fee could be charged for the loan of the coops. He did not think Mr. Browne could name one place where the local association had its own coops.

Ottawa and one or two other places were named.

Mr. WAGNER said in Toronto they had none but what were in the Industrial.

Mr. DILWORTH did not favor lending the coops. He instanced some few years ago when the Association had an exhibition in Toronto; they borrowed the coops from the Industrial, and no one could imagine the damage that was done to them. Some were almost destroyed, and it took a large amount of money to put them in proper shape again.

Mr. FIELD was of opinion that these coops were purchased by the Government with the intention that they be loaned to the local shows. He could mention a number of members of the Legislature who voted for the grant in that belief.

Mr. WAGNER reminded Mr. Dilworth that the coops to which he had referred were wooden coops, and more easily damaged than the wire coops, which could be readily folded up for transportation.

Mr. MCCORMICK advanced the opinion that before putting these coops in charge of the Government as had been suggested, it should first be ascertained whether or not the Government would take charge of them. He did not think himself that the Government would have anything to do with them. The coops would soon be damaged, and many of them destroyed if they were loaned promiscuously.

Mr. J. H. SANDERS said the coops did not belong to the Government, and the Government should have nothing to do with them. They belonged to the Ontario Poultry Association. They had worked hard for years to build up this show, and the Government acknowledged their indebtedness to the Association for the good work they had done by making them a grant for these coops. The money was put to the use for which it was given. The Government had no more claim on the coops than he, the speaker, had.

Dr. MALLORY said, so far as he understood the drift of the remarks that had been made, they agreed with his views to a certain extent. Some of the members, however, did not appear to have taken the full meaning of his suggestien, which was that a fee be charged for the use of these coops. Considerable expense would be incurred in transporting them to and from the place of storage, and his suggestion was that the parties getting the use of the coops should bear all the expenses of taking them to the place of exhibition, and returning them again in good condition. If there was one position that had been taken by the Association it was this, that it was the conservator of the poultry interests of the Province, and much had been said with regard to fostering the poultry interests of the country at large. Did they, he asked, mean what they said? Were they business men? Did they understand the purpose of the language used? If they did, they should show it by utilizing every means in their power to carry out the suggestions they had advanced in this particular. Here was a means they had of fostering the poultry interests of the Province by assisting in making good and attractive exhibitions in different localities. If they folded their hands and said they would not loan these coops, and assist in advancing poultry interests in this way, the idea would get abroad that the Association cared nothing about fanciers at large, but were interested only in themselves. What if the coops were worn out in five or six years? They would be worn out from being put to a good use, and the Government would say, "Well done; you have been fostering this interest, and here is a thousand dollars for a new set of coops."

Mr. M. T. BURN said he would be in favor of any local association having the coops, but let it remain with the Directors what the remuneration shall be for their use, and what shall be paid for the damage, if any, done to them.

Moved by Dr. MALLORY, seconded by A. BROWN, Picton, "That the coops of this Association be placed in charge of the Secretary of the Association, and that they be loaned to local poultry associations of the Province, on the condition that the association borrowing them give a proper guarantee for all expenses of carriage, damage and return of same to place of storage."

Mr. WAGNER suggested that a fee of $25 be charged for the use of the coops.

Mr. M. T. BURN thought that a matter to be left entirely with the Directors.

Moved in amendment by Mr. SANDERS, seconded by Mr. MCCORMICK, "That the matter of loaning and taking care of the coops be left at the discretion of the Board of Directors."

The amendment was carried.

DATE OF NEXT ANNUAL MEETING.

Moved by Dr. MALLORY, seconded by Mr. BOGUE, "That the annual exhibition for 1897 be held in the second clear week, or in other words commencing the second Monday of January, of that year." Carried.

Mr. M. T. BURN, seconded by Mr. DUFF, moved a vote of thanks to the President, his colleagues and the superintendent, for the most efficient way the exhibition had been managed. In making this motion Mr. BURN said he had never attended a show that was better handled than this one. The new coops had a good deal to do with the general appearance.

The motion was carried with applause.

ESSAYS.

Mr. DUFF said a good many gentlemen appeared to be leaving, but there was some of the miscellaneous business yet to be completed. He asked if some provision could not be made in future for the reading of essays. The Association had done nothing all the afternoon but wrangle and talk. He understood the Government wanted this Association to be of benefit to the farmers and the public at large. There was a minute in the book which said every Director should prepare an essay and *read* it at the Annual Meeting. He was a Director and had prepared an essay, but if he could not have the privilege of reading it after all his trouble, he would take good care that he would not prepare another. Why could they not have an afternoon that would be devoted to the discussion of poultry, and have posters put out beforehand inviting farmers and others interested in poultry to attend the meeting and help them on in one of the most important industries we have in Canada to day. If called upon to prepare something for the Annual Report he could do so, but he did not think he should be asked to prepare an essay for the Annual Meeting and carry it around in his pocket. He could prepare an article for the Report after he got back without going to the trouble of getting one ready to bring here to read, and then be content with having it "considered as read."

This brought up a little discussion. Several members wanted to hear the essays read, but the hour was getting late, and it was suggested that the Association adjourn until seven o'clock. Here again it was found there was a difficulty. The people of Port Hope had prepared an entertainment specially for the members of the Association, and it would be discourteous for the members to absent themselves.

It was finally moved by Mr. MCCORMICK, seconded by Mr. BELL, "That when this meeting adjourns it stands adjourned until to-morrow morning at ten o'clock, then to meet for the presentation and discussion of the essays prepared."

Moved in amendment by Mr. BOGUE, seconded by Mr. DUFF, "That hereafter the afternoon of Wednesday of show week be devoted to the presentation and discussion of essays on practical poultry breeding."

The amendment was carried.

Moved by Dr. MALLORY, seconded by Mr. YALE, "That the essays prepared for presentation at this meeting be taken as read, and the same be published in the Report." Carried.

MEETING OF DIRECTORS.

PORT HOPE, January 10, 1896.

The first meeting of the Board of Directors of the Poultry Association of Ontario for the year 1896 was held this (Friday) morning, at 10 o'clock, in the council chamber, Town Hall, Port Hope. The newly-elected First Vice-President, Mr. ALLAN BOGUE, London, occupied the chair in the absence of Mr. THOMAS GOWDY, the President. Present: Messrs. Henry White, D. C. Trew, Wm. Barber, M. T. Burn, T. H. Scott, William McNeil, Thomas Rice and T. J. Senior.

The minutes of the last directors' meeting having been read at the annual meeting, it was moved and carried that they be taken as read, and confirmed.

The principal matter before the meeting was the request from the Cobourg Association for the use of our new coops for the holding of their show; also one from Mr. John Morrow, Secretary, Colborne Association, to the same effect. This matter being brought before the annual meeting, was referred to this Board, where it was most thoroughly discussed. Each member present expressed his opinion in regard to it, after

which it was moved by Mr. White, seconded by Mr. Trew, that while we do not wish to appear selfish or unsociable, it is in the best interests of this Association and the welfare of the poultry industry that the new coops be *not* loaned to any Society upon any consideration. Carried.

It was, upon motion, decided to instruct the Treasurer and Secretary to pay the accounts of the Association when satisfied of their correctness; also to discount a note for the purpose of paying the prizes and accounts until the grant from the Ontario Government should be received, as the Secretary had arranged to have everything ready to pay the prize money to-morrow (Friday) morning at 10 o'clock, which will be the first time in the history of our Association, and will be highly appreciated by the exhibitors.

An application from the Cobourg Association for the use of our tin score card holders was read. It was moved by Mr. McNeil, seconded by Mr. Barber, that the request be granted, and that the superintendent allow them to have them on promising to return them in the same condition they are now in, and immediately after the close of their show. Carried.

Moved by Mr. Trew, and seconded by Mr. Burn, that the Secretary's salary be increased to $150, and that the increase take effect this present year. Carried.

The Secretary heartily thanked the Board for their kindness in showing their appreciation of his services in so tangible a manner, and stated he would do his best to merit the action of the Board.

It was decided that the next Board meeting be held in the Industrial Board rooms, Toronto, on Wednesday of their second week, viz., September 9th, 1896, at 2 o'clock, and that the necessary application be made for the use of same.

It was suggested that the Board consider the advisability of holding their meeting for the consideration of prize list and other important matters in relation to the following exhibition of this Association at the time of our annual meeting, so that the Secretary might be there, as under the present arrangement he is not able to attend.

Thomas A. Browne,
Secretary.

POULTRY EXHIBITION.

Held at Port Hope, Jan. 6th to 10th, 1896.

List of varieties on exhibition and the number in each.

Varieties.	Number of specimens.	Varieties.	Number of specimens.	Varieties.	Number of specimens.
Brahmas	32	Javas	24	Ducks	33
Cochins	42	Spanish	16	Pheasants, Pigeons, Rabbits and Songsters	166
Plymouth Rocks	91	Minorcas	34		
Games	166	Houdans	25	Dressed.	
Bantams	97	Creve Cœurs	6	Poultry, Turkeys and Ducks	8
Langshans	26	La Fleche	8		
Wyandottes	107	Polands	64	Eggs.	
Leghorns	123	Red Caps	20	Best and Heaviest Hens' Eggs	6
Andalusians	17	A. O. V. Fowls	17		
Hamburgs	59	Cross Breeds	10		
Dorkings	42	Turkeys	12		
Dominiques	9	Geese	14	Total	1,274

Names of the places represented in the exhibition and the number of specimens from each.

Place.	County.	Number.	Place.	County.	Number.
Angus	Simcoe	12	Oshawa	Ontario	14
Bowmanville	Durham	23	Osaca	Durham	11
Cobourg	Northumberland, W	52	Port Hope	"	141
Colborne	" E	10	Picton	Prince Edward	14
Deer Park	York	7	Strathroy	Middlesex	20
Hamilton	Wentworth	40	St. Thomas	Elgin	25
Kingston	Frontenac	110	Toronto and suburbs	York	317
London and suburbs	Middlesex	348	Woodstock	Oxford	12
Lindsay	Victoria	20	Wisbeach	Lambton	5
Milton West	Halton	18	Whitby	Ontario	31
Malvern	York	6	West Flamboro'	Wentworth	6
Napanee	Lennox	18			
New Hamburg	Waterloo	14		Total	1,274

LIST OF AWARDS.

Following is a list of prize winners at the 22nd Annual Exhibition of the Ontario Poultry Show, held at Port Hope, January 6th to 10th, 1896:

Brahmas—Light.

Cock.—1st, John Cole, Hamilton, 92½; 2nd, Oldrieve & Wilkinson, Kingston, 92; 3rd, John Cole, 91.
Hen.—1st, W. H. McGaw, Hamilton, 93½; 2nd, George Bogue, Strathroy, 93½; 3rd, John Cole, 92½.
Cockerel.—1st, John Cole, 93½; 2nd, W. H. McGaw, 93; 3rd, Oldrieve & Wilkinson, 92½.
Pullet.—1st, Oldrieve & Wilkinson, and special, 94½; 2nd, W. T. Gibbard, Napanee, 94; 3rd, W. H. McGaw, 94.

Brahmas—Dark.

Cock.—1st, J. H. Saunders, London, 93.
Hen.—1st, J. H. Saunders, 92½; 2nd, Thorpe & Scott, London, 92½; 3rd, Thorpe & Scoot, 90½.
Cockerel.—1st, Thorpe & Scott, 93½; 2nd, Thorpe & Scott, 93.
Pullet.—1st, Thorpe & Scott, 91; 2nd, Thorpe & Scott, 89½.

Cochin—Buff.

Cock.—1st, Geo. G. McCormick, London, 94; 2nd, Geo. G. McCormick, 93; 3rd, Geo. G. McCormick, 92½.
Hen.—1st, Geo. G. McCormick, 95½; 2nd, Geo. G. McCormick, 93; 3rd, Geo. G. McCormick 92½.
Cockerel.—1st, Geo. G. McCormick, 93; 2nd, Geo. G. McCormick, 91½; 3rd, Geo. G. McCormick, 91.
Pullet.—1st, Ed. Wyatt, London, 95; 2nd, Geo. G. McCormick, 94; 3rd, Geo. G. McCormick, 94.

Cochin—Partridge.

Cock.—2nd, Richard Oke, London, 89½.
Hen.—1st, Richard Oke, 93½; 2nd, Allan Bogue, 92½; 3rd, L. G. Pequegnat, New Hamburg, 90½.
Cockerel.—1st, Richard Oke, 90; 2nd, L. G. Pequegnat, 89½; 3rd, L. G. Pequegnat, 88.
Pullet.—1st, Richard Oke, 94; 2nd, L. G. Pequegnat, 88½.

Cochin—Black.

Cock.—1st, Geo. G. McCormick, 93; 2nd, Geo. G. McCormick, 92.
Hen.—1st, Geo. G. McCormick, 92; 2nd, Geo. G. McCormick, 91.
Cockerel.—1st, Geo. G. McCormick, 90½; 2nd, Geo. G. McCormick, 89.
Pullet.—1st, Geo. G. McCormick, 93½; 2nd, Geo. G. McCormick, 92½.

Cochin—White.

Cock.—1st, William McNeil, London, 93½.
Hen.—1st, William McNeil, 94; 2nd, Ed. Wyatt, 92½; 3rd, C. J. Daniels, Toronto, 87.
Cockerel.—1st, William McNeil, and special, 96½; 2nd, Ed. Wyatt, 92½; 3rd, William McNeil, 91.
Pullet.—1st, William McNeil, 95½; 2nd, William McNeil, 95.

PLYMOUTH ROCKS—BARRED.

Cock.—1st, Oldrieve & Wilkinson, 92; 2nd, Thos. A. Duff, Toronto, 91½; 3rd, C. Fairbank, 89½.
Hen.—1st, J. E. Bennett, Toronto, 94; 2nd, Oldrieve & Wilkinson, 92½; 3rd, J. E. Bennett, 92.
Cockerel.—1st, Thos. A. Duff, 94; 2nd, Oldrieve & Wilkinson, 92; 3rd, Thos. A. Duff, 91.
Pullet.—1st, Oldrieve & Wilkinson, 93½; 2nd, J. E. Bennett, 92; 3rd, Thos. A. Duff, 91½.

PLYMOUTH ROCKS—WHITE.

Cock.—1st, Thos. Rice, Whitby, 92; 2nd, Stephen Kirby, Woodstock, 91½; 3rd, C. J. Daniels, 91.
Hen.—1st, Thos. Rice, 95; 2nd, Thos. Rice, 94; 3rd, George Bogue, 92.
Cockerel.—1st, Thos. Rice, 94½; 2nd, Robert Scott, London, 93½; 3rd, J. H. Baulch, Port Hope, 93
Pullet.—1st, Thos. Rice, and special, 95½; 2nd, Thos. Rice, 95½; 3rd, J. H. Baulch, 94½.

PLYMOUTH ROCKS—BUFF.

Cock.—1st, Stephen Kirby, 90.
Hen.—2nd, C. J. Daniels, 88.
Cockerel.—1st, T. J. Keiley, London, 93; 2nd, C. J. Daniels, 91½; 3rd, R. H. Essex, Toronto, 88½.
Pullet.—1st, R. H. Essex, 92½; 2nd, R. H. Essex, 91; 3rd, H. H. Walker, Port Hope, 90.

GAME—BLACK B. RED.

Cock.—1st, Oldrieve & Wilkinson, 94; 2nd, Oldrieve & Wilkinson, 94; 3rd, Thos. Geoghehan, Hamilton, 93.
Hen.—1st, W. Barber, Toronto, 94; 2nd, W. Barber, 93; 3rd, William Main, Milton, 93.
Cockerel.—1st, William Main, 93½; 2nd, William Main, 92½; 3rd, Fred Field, Cobourg, 92½.
Pullet.—1st, William Barber, 35; 2nd, William Main, 93½; 3rd, William Barber, 93.

GAME—BROWN B. REDS.

Cock.—1st, Oldrieve & Wilkinson, 93; 2nd, William Barber, 92.
Hen.—1st, William Barber, 95; 2nd, William Barber, 95; 3rd, Oldrieve & Wilkinson, 94.
Cockerel.—1st, Oldrieve & Wilkinson, 92; 2nd, William Barber, 91½.
Pullet.—1st, William Barber, 95½; 2nd, L. G. Pequegnat, 92; 3rd, William Barber, 92.

GAME—DUCKWING.

Cock.—1st, W. Barber, 95½; 2nd, Oldrieve & Wilkinson, 92; 3rd, William Barber, 89½.
Hen.—1st, William Barber, 92½; 2nd, William Barber, 91.
Cockerel—1st, F. Troth, Toronto, 94½; 2nd, F. Troth, 93; 3rd, William Barber, 92.
Pullet.—1st, William Barber, 93½; 2nd, F. Troth, 92; 3rd, William Barber, 92.

GAME—PYLE.

Cock.—1st, William Barber, 92½.
Hen.—1st, Oldrieve & Wilkinson, 94; 2nd, William Barber, 94.
Cockerel.—1st, William Barber, 92; 2nd, William Barber, 90.
Pullet.—1st, William Barber, 94½; 2nd, F. Troth, 94; 3rd, Oldrieve & Wilkinson, 92.

GAME—INDIAN.

Cock.—1st, Oldrieve & Wilkinson, and special, 95; 2nd, Thos. E. Burt, Port Hope, 92; 3rd, C. J. Daniels, 90½.
Hen.—1st, Oldrieve & Wilkinson, 93; 2nd, Ben Shaw, Toronto, 92½; 3rd, John Cole, 92½.
Cockerel.—1st, W. T. Gibbard, 94; 2nd, T. E. Burt, 93; 3rd, Sidney Hobart, Cobourg, 92.
Pullet.—1st, John Cole, 93; 2nd, Oldrieve & Wilkinson, 93; 3rd, Sidney Hobart, 92½.

GAME—A. O. S. V.

Cock.—1st, C. J. Daniels; 2nd, Gowman & Hortop, St. Thomas; 3rd, C. J. Daniels.
Hen.—1st, Oldrieve & Wilkinson; 2nd, Gowman & Hortop; 3rd, C. J. Daniels.
Cockerel.—1st, Gowman & Hortop, and special; 2nd, C. J. Daniels; 3rd, Gowman & Hortop.
Pullet.—1st, C. J. Daniels; 2nd, Gowman & Hortop; 3rd, Gowman & Hortop.

BANTAMS—BLACK RED.

Cock.—1st, William Barber, 94½; 2nd, Oldrieve & Wilkinson, 94; 3rd, William Barber, 93½.
Hen.—1st, William Barber, 96½; 2nd, William Barber, 94½; 3rd, Oldrieve & Wilkinson, 94½.
Cockerel.—1st, William Barber, 96½; 2nd, William Barber, 96; 3rd, Oldrieve & Wilkinson, 95½.
Pullet.—1st, William Barber, 95; 2nd, William Barber, 94½; 3rd, William Barber, 94.

BANTAMS—BROWN RED.

Cock.—1st, William Barber, 93½; 2nd, Oldrieve & Wilkinson, 91½; 3rd, William Barber, 91.
Hen.—1st, William Barber, 94½; 2nd, Oldrieve & Wilkinson, 94; 3rd, William Barber, 94.
Cockerel.—1st, William Barber, 93½; 2nd, Oldrieve & Wilkinson, 92; 3rd, William Barber, 90.
Pullet.—1st, Oldrieve & Wilkinson, 91½; 2nd, William Barber, 89½.

BANTAMS—DUCKWING.

Cock.—1st, Oldrieve & Wilkinson, 93½; 2nd, William Barber, 92½; 3rd, William Barber, 89¾.
Hen.—1st, Oldrieve & Wilkinson, 94; 2nd, William Barber, 94; 3rd, William Barber, 92.
Cockerel.—1st, William Barber, 93; 2nd, William Barber, 93.
Pullet.—1st, William Barber, 93½; 2nd, William Barber, 91¾; 3rd, Oldrieve & Wilkinson, 91½.

BANTAMS—PYLE.

Cock.—1st, William Barber, 92½; 2nd, William Barber, 92¼.
Hen.—1st, Oldrieve & Wilkinson, 94; 2nd, William Barber, 92; 3rd, William Barber, 91½.
Cockerel.—1st, William Barber, 93½; 2nd, William Barber, 98; 3rd, Oldrieve & Wilkinson, 92.
Pullet.—1st, Oldrieve & Wilkinson, 94½; 2nd, William Barber, 94½; 3rd, William Barber, 94½.

BANTAMS—G. SEBRIGHT.

Cock.—1st, William McNeil, 93½.
Hen.—1st, Richard Oke, 94.
Cockerel.—1st, William McNeil, 94; 2nd, Richard Oke, 91.
Pullet.—1st, William McNeil, 95; 2nd, Richard Oke, 94½.

BANTAMS—S. SEBRIGHT.

Cock.—1st, William McNeil, 95½; 2nd, Richard Oke, 94.
Hen.—1st, William McNeil, 95; 2nd, Richard Oke, 95.
Cockerel.—1st, Richard Oke, 95; 2nd, William McNeil, 94¾; 3rd, W. H. Reid, Kingston, 92.
Pullet.—1st, Richard Oke, 95½; 2nd, William McNeil, 94½; 3rd, W. H. Reid, 93½.

BANTAMS—W. OR B. R. C.

Cock.—1st, Richard Oke, 96; 2nd, William McNeil, 95½.
Hen.—1st, Richard Oke, 96; 2nd, William McNeil, 94.
Cockerel.—1st, William McNeil, 95½; 2nd, Richard Oke, 94½; 3rd, W. T. Gibbard, 93½.
Pullet.—1st, William McNeil, 95½; 2nd, Richard Oke, 94½; 3rd, W. T. Gibbard, 92½.

BANTAMS—PEKIN.

Cock.—1st, William McNeil, 92; 2nd, Richard Oke, 90¾.
Hen.—1st, Richard Oke, 94½; 2nd, William McNeil, 94.
Cockerel.—1st, Richard Oke, 95½; 2nd, William McNeil, 93½; 3rd, C. J. Daniels, 91¾.
Pullet.—1st, William McNeil, 96½; 2nd, W. H. Reid, 95; 3rd, Richard Oke, 93½.

BANTAMS—COCHIN.

Cock.—1st, William McNeil, 95½; 2nd, William McNeil, 94½; 3rd, H. B. Donovan, Toronto, 93½.
Hen.—1st, William McNeil, 96½; 2nd, H. B. Donovan, 96; 3rd, H. B. Donovan, 95.
Cockerel.—1st, H. B. Donovan, 94½; 2nd, William McNeil, 94½; 3rd, William McNeil, 93.
Pullet.—1st, William McNeil, 92; 2nd, William McNeil, 91½.

BANTAMS—W. BOOTED.

Cock.—1st, Richard Oke, 90.
Hen.—1st, Richard Oke, 94.
Cockerel.—1st, Richard Oke, 91½.
Pullet.—1st, Richard Oke, 93.

BANTAMS—JAPANESE.

Cock.—1st, William McNeil, 95½; 2nd, Richard Oke, 93; 3rd, C. J. Daniels, 90.
Hen.—1st, William McNeil, 95½; 2nd, Richard Oke, 93; 3rd, C. J. Daniels, 92½.
Cockerel.—1st, Richard Oke, 95; 2nd, William McNeil, 95; 3rd, C. J. Daniels, 90.
Pullet.—1st, William McNeil, 96; 2nd, Richard Oke, 94½; 3rd, Geo. L. Haw, 92.

BANTAMS—POLISH.

Cock.—1st, William McNeil, 93½; 2nd, William McNeil, 92.
Hen.—1st, William McNeil, 96½; 2nd, William McNeil, 96.
Cockerel.—William McNeil, 95½; 2nd, H. B. Donovan, 93½; 3rd, William McNeil, 89½.
Pullet.—1st, William McNeil, 95; 2nd, William McNeil, 95.

BANTAMS—A. O. V.

Cock.—1st, William McNeil, 96; 2nd, H. B. Donovan, 94; 3rd, Richard Oke, 88.
Hen.—1st, William McNeil, 94½; 2nd, H. H. Donovan, 93½; 3rd, Richard Oke, 92½.
Cockerel.—1st, William McNeil, 94; 2nd, William McNeil, 94; 3rd, H. B. Donovan, 91.
Pullet.—1st, William McNeil, 96; 2nd, William McNeil, 95; 3rd, H. B. Donovan, 92.

LANGSHANS—BLACK.

Cock—1st, Oldrieve & Wilkinson, 93½; 2nd, Knight & Osborne, Bowmanville, 92; 3rd, Robt. McCurdy, London, 90½.
Hen.—1st, Robt. McCurdy and special, 96½; 2nd, Robt. McCurdy, 95; 3rd, Robt. McCurdy, 94½.
Cockerel.—1st, T. H. Scott, St. Thomas, 96; 2nd, Robert Scott, 96; 3rd, T. H. Scott, 95½.
Pullet.—1st, T. H. Scott, 95½; 2nd, T. H. Scott, 94½; 3rd, Robt. McCurdy, 94.

LANGSHANS—A. O. C.

Cockerel.—1st, Oldrieve & Wilkinson, 92.
Pullet.—1st, Oldrieve & Wilkinson, 92.

WYANDOTTES—GOLDEN.

Cock.—1st, J. H. Magill, Port Hope, 91; 2nd, Oldrieve & Wilkinson, 91; 3rd, A. W. Graham, St Thomas, 89.
Hen.—1st, Oldrieve & Wilkinson, 92; 2nd, Oldrieve & Wilkinson, 91; 3rd, James Lenton, Oshawa, 88½.
Cockerel.—1st, J. H. Magill, 92; 2nd, A. W. Graham, 90½; 3rd, Richard Oke, 90½.
Pullet.—1st, Oldrieve & Wilkinson, and special cup, 95; 2nd, Oldrieve & Wilkinson, 94; 3rd, James Lenton, 92.

WYANDOTTES—SILVER.

Cock.—1st, Jacob Dorst, Toronto, 92½; 2nd, George Bogue, 89½; 3rd, George Bogue, 88½.
Hen.—1st, Jacob Dorst, 90½; 2nd, Jacob Dorst, 89½; 3rd, J. L. Margach, Port Hope, 86½.

Cockerel.—1st, Jacob Dorst, 92½; 2nd, W. J. Bell, Angus, 90; 3rd, Jacob Dorst, 89.
Pullet.—1st, Jacob Dorst, 92½; 2nd, George Bogue, 92; 3rd, Jacob Dorst, 91½.

WYANDOTTES—BLACK.

Cock.—1st, George Bogue, 92½.
Hen.—1st, George Bogue, 92; 2nd, T. J. Keiley, 91½.
Cockerel.—1st, T. J. Keiley, 92½; 2nd, George Bogue, 89½.
Pullet.—1st, George Bogue, and special, 95; 2nd, T. J. Keiley, 93; 3rd, T. J. Keiley, 90½.

WYANDOTTES—BUFF.

Cock.—1st, Stephen Kirby, 90.
Cockerel.—1st, F. H. Brown, Port Hope, 92; 2nd, F. H. Brown, 91½; 3rd, Fred Field, 89½.
Pullet.—1st, Fred Field, 92; 2nd, F. H. Brown, 91; 3rd, F. H. Brown, 88.

WYANDOTTES—WHITE.

Cock.—1st, Geo. G. McCormick, London, 94½; 2nd, Chas. Massie, Port Hope, 93; 3rd, Geo. G. McCormick, 93.
Hen.—1st, Geo. G. McCormick, 95½; 2nd, Chas. Massie, 95; 3rd, Oldrieve & Wilkinson, 93½.
Cockerel.—1st, Geo. G. McCormick, 93½; 2nd, Geo. G. McCormick, 93; 3rd, Geo. Bogue, 92½.
Pullet.—1st, Chas. Massie, 96½; 2nd, Geo. G. McCormick, 95; 3rd, James Buckle, Port Hope, 93½.

LEGHORNS—S. C. WHITE.

Cock.—1st, Thos. Rice, 93½; 2nd, D. C. Trew, Lindsay, 92½; 3rd, John Morrow, Colborne, 89½.
Hen.—1st, Thos. Rice, and special, 96½; 2nd, Thos. Rice, 96; 3rd, Thos. Rice, 95½.
Cockerel.—1st, Thos. Rice, 95½; 2nd, Thos. Rice, 94½; 3rd, D. C. Trew, 92.
Pullet.—1st, Thos. Rice, 96; 2nd, Thos. Rice, 96; 3rd, D. C. Trew, 95½.

LEGHORNS—S. C. BROWN.

Cock.—1st, Thos. Rice, 93; 2nd, Thos. Rice, 95½; 3rd, A. H. Lake, Toronto, 91.
Hen.—1st, Thos. Rice, 95; 2nd, Thos. Rice, 93½; 3rd, A. H. Lake, 93.
Cockerel.—1st, Thos. Rice, 95½; 2nd, Knight & Osborne, 93½; 3rd, Thos. Rice, 92½.
Pullet.—1st, Thos. Rice, 95; 2nd, Thos. Rice, 94; 3rd, J. L. Margach, 94.

LEGHORNS—S. C. BLACK.

Hen.—1st, Geo. Downham, Wisbeach, 94; 2nd, Robt. Scott, 93½; 3rd, C. J. Daniels, 89½.
Cockerel.—1st, Geo. Downham, 94½; 2nd, Geo. Downham, 94; 3rd, Robert Scott, 92½.
Pullet.—1st, Geo. Downham, 94½; 2nd, Geo. Downham, 94; 3rd, Robert Scott, 93½.

LEGHORNS—BUFF:

Cock.—1st, C. F. Wagner, Toronto, 90; 2nd, C. F. Wagner, 89½; 3rd, James Dundas, Deer Park, 87½.
Hen.—1st, ; 2nd, S. Hobart, 88½; 3rd, C. F. Wagner, 88.
Cockerel.—1st, G. S. Horsford, 91; 2nd, James Dundas, 90½; 3rd, C. J. Daniels, 88½.
Pullet.—1st, James Dundas, 91½; 2nd, C. F. Wagner, 91; 3rd, James Dundas, 91.

LEGHORNS—R. C. BROWN.

Cock.—1st, C. Glendenning, London, 92; 2nd, Oldrieve & Wilkinson, 91½.
Hen.—1st, C. Glendenning, 94; 2nd, Oldrieve & Wilkinson, 92; 3rd, Robert Scott, 87.
Cockerel.—1st, Oldrieve & Wilkinson, 95; 2nd, C. Glendenning, 95½; 3rd, Robert Scott, 92.
Pullet.—1st, Oldrieve & Wilkinson, 95; 2nd, Robert Scott, 92; 3rd, C. Glendenning, 91½.

LEGHORNS—R. C. WHITE.

Cock.—1st, T. J. Keiley, 93½; 2nd, T. J. Keiley, 92; 3rd, W. H. Reid, Kingston, 89½.
Hen.—1st, W. J. Bell, Angus, 94½; 2nd, T. J. Keiley, 94; 3rd, T. J. Keiley, 93½.
Cockerel.—1st, T. J. Keiley, 94½; 2nd, R. Sinclair, Kingston, 94; 3rd, W. J. Bell, 93½.
Pullet.—1st, W. J. Bell, 95½; 2nd, W. J. Bell, 95½; 3rd, T. J. Keiley, 95.

ANDALUSIANS.

Cock.—1st, : 2nd, C. J. Daniels, 89; 3rd, Knight & Osborne, 88½.
Hen.—1st, Newton Cosh, Woodstock, 94; 2nd, Knight & Osborne, 90½; 3rd, W. H. Dustan, Bowmanville, 89.
Cockerel.—1st, Knight & Osborne, 92; 2nd, Newton Cosh, 90½; 3rd, Newton Cosh, 89½.
Pullet.—1st, Knight & Osborne, 91; 2nd, C. J. Daniels, 91; 3rd, W. H. Dustan, 90.

HAMBURGS.—G. S.

Cock.—1st, William McNeil, 95; 2nd, Allan Bogue, London, 91½.
Hen.—1st, William McNeil, 95; 2nd, Richard Oke, 94; 3rd, Allan Bogue, 91.
Cockerel.—1st, William McNeil, 95; 2nd, James T. Clarke, 91.
Pullet.—1st, William McNeil, 95; 2nd, Allan Bogue, 92½.

HAMBURGS—S. S.

Cock.—1st, William McNeil, 93½; 2nd, Richard Oke, 92½; 3rd, Allan Bogue, 87.
Hen.—1st, Richard Oke, 95; 2nd, William McNeil, 95; 3rd, Allan Bogue, 93.
Cockerel.—1st, William McNeil, 94; 2nd, Allan Bogue, 93½; 3rd, R. Sinclair, 92.
Pullet.—1st, William McNeil, 95½; 2nd, Allan Bogue, 94½; 3rd, R. Sinclair, 93.

HAMBURGS—G. P.

Cock.—1st, William McNeil, 94½, 2nd, Richard Oke, 93.
Hen.—1st, Richard Oke, 96½; 2nd, Allan Bogue, 94½; 3rd, William McNeil, 93½.
Cockerel.—1st, William McNeil, 96; 2nd, Allan Bogue, 94.
Pullet.—1st, Allan Bogue, 95½; 2nd, William McNeil, 95½; 3rd, Richard Oke, 95.

HAMBURGS—S. P.

Cock.—1st, William McNeil, 95; 2nd, Richard Oke, 93½; 3rd, Allan Bogue, 92.
Hen.—1st, William McNeil, 96; 2nd, Richard Oke, 94; 3rd, Allan Bogue, 91½.
Cockerel.—1st, William McNeil, 96½; 2nd, Allan Bogue, 92.
Pullet.—1st, Richard Oke, 95; 2nd, William McNeil, 94½; 3rd, Allan Bogue, 93½.

HAMBURGS—BLACK.

Cock.—1st, William McNeil, 95½; 2nd, Richard Oke, 93½.
Hen.—1st, William McNeil, 95½; 2nd, Richard Oke, 93½.
Cockerel.—1st, William McNeil, 96; 2nd. Richard Oke, 94½; 3rd. R. H. Essex, 93½.
Pullet.—1st, William McNeil, 96; 2nd, Richard Oak, 95½; 3rd, R. H. Essex, 93½.

DORKINGS—SILVER GREY.

Cock.—1st, A. Noden, Toronto, 95; 2nd, A. Noden, 91.
Hen.—1st, Allan Bogue, 93½; 2nd, J. L. Corcoran, Toronto, 93; 3rd, J. L. Corcoran 93.
Cockerel.—1st, J. L. Corcoran, 93; 2nd, Allan Bogue, 93; 3rd, J. L. Corcoran, 93.
Pullet.—1st, J. L. Corcoran, 95; 2nd, Allan Bogue, 94½; 3rd, A. Noden, 94½.

DORKINGS—COLORED.

Cock.—1st, Allan Bogue, 91½; 2nd, W. H. Reid, 91.
Hen.—1st, Allan Bogue, 93.
Cockerel.—1st, Allan Bogue, 92½; 2nd, John Lawrie, Malvern, 92; 3rd, John Lawrie, 90.
Pullet.—1st, John Lawrie and special, 96½; 2nd, Allan Bogue, 94; 3rd, John Lawrie, 92½.

DORKINGS—WHITE.

Cock.—1st, Allan Bogue, not scored; 2nd, Allan Bogue.
Hen.—1st, Allan Bogue; 2nd, Allan Bogue.
Cockerel.—1st, Allan Bogue; 2nd, Allan Bogue.
Pullet.—1st, Allan Bogue; 2nd, Allan Bogue.

DOMINIQUES.

Cock.—1st, George Bogue, 90½.
Hen.—1st, George Bogue, 90½; 2nd, Oldrieve & Wilkinson, 87½; 3rd, William McNeil, 84½.
Cockerel.—1st, George Bogue, 91; 2nd, George Bogue, 88½.
Pullet.—2nd, Oldrieve & Wilkinson, 89; 3rd, George Bogue, 88½.

JAVAS—BLACK.

Cock.—1st, Geo. G. McCormick, 94½; 2nd, Geo. G. McCormick, 91½; 3rd, C. J. Daniels, 90½.
Hen.—1st, Geo. G. McCormick, 94½; 2nd, Geo. G. McCormick, 93½; 3rd, H. M. Henrich, New Hamburg, 93½.
Cockerel.—1st, Geo. G. McCormick, 93½; 2nd, C. J. Daniels, 93; 3rd, Geo. G. McCormick, 92.
Pullet.—1st, Geo. G. McCormick, 95; 2nd, Geo. G. McCormick, 93; 3rd, Knight & Osborne, 92½.

JAVAS—A. O. C.

Hen.—1st, C. J. Daniels, 94½.
Cockerel.—1st, Alf. Brown, Picton, 91½; 2nd, C. J. Daniels, 90.
Pullet.—1st, Alf. Brown, 93; 2nd, C. J. Daniels, 92; 3rd, Alf. Brown, 91½.

SPANISH—BLACK.

Cock.—1st, Alex. Fraser, New Hamburg, 94½; 2nd, J. L. Corcoran, 92.
Hen.—1st, F. C. Hare, Whitby, 93½; 2nd, J. L. Corcoran, 91; 3rd, J. L. Corcoran, 91.
Cockerel.—1st, Alex. Fraser, 94½; 2nd, J. L. Corcoran, 93; 3rd, John Hayden, 92.
Pullet.—1st, John Hayden, 94; 2nd, Alex. Fraser, 93; 3rd, F. C. Hare, 92½.

MINORCAS—BLACK.

Cock.—1st, John Ford, Toronto, 93; 2nd, Thos. A. Duff, 91½; 3rd, Geo. M. Haven, Toronto, 90.
Hen.—1st, Thos. A. Duff, 92½; 2nd, John Ford, 91½; 3rd, John Ford, 91.
Cockerel.—1st, Thos. A. Duff and special, 94; 2nd, James Topley, Port Hope, 91; 3rd, James Topley, 89.
Pullet.—1st, Thos. A. Duff, 94; 2nd, James Dundas, 92; 3rd, Geo. M. Haven, 91½.

MINORCAS—WHITE.

Cock.—1st, Thos. A. Duff, 91½; 2nd, Thos. A. Duff, 89½.
Hen.—1st, Thos. A. Duff, 93; 2nd, Thos. A. Duff, 92; 3rd, Thos. A. Duff, 89.
Cockerel.—1st, Thos. A. Duff, 93; 2nd, Thos. A. Duff, 91; 3rd, C. J. Daniels, 88.
Pullet.—1st, Thos. A. Duff, 91; 2nd, C. J. Daniels, 90; Thos. A. Duff, 90.

HOUDANS.

Cock.—1st, D. C. Trew, 91; 2nd, Allan Bogue, 90; 3rd, Oldrieve & Wilkinson, 89.
Hen.—1st, D. C. Trew, and special, 93½; 2nd, Oldrieve & Wilkinson, 93; 3rd, Allan Bogue, 92½.
Cockerel.—1st, D. C. Trew, 90½; 2nd, C. Stockwell, London, 90; 3rd, D. C. Trew, 90.
Pullet.—1st, D. C. Trew, 93; 2nd, Allan Bogue, 93; 3rd, D. C. Trew, 92.

CREVE COEURS

Cock.—1st, Richard Oke, 94.
Hen.—1st, Richard Oke, 94; 2nd, Richard Oke, 91.

Pullet.—1st, Richard Oke, 93; 2nd, Richard Oke, 91.
Cockerel.—1st, Richard Oke, 93.

LA FLECHE.

Cock.—1st, Richard Oke, 92; 2nd, Richard Oke, 91.
Hen.—1st, Richard Oke, 93; 2nd, Richard Oke, 92.
Cockerel.—1st, Richard Oke, 91; 2nd, Richard Oke, 89.
Pullet.—1st, Richard Oke, 90; 2nd, Richard Oke, 89.

POLANDS—W. C. B.

Cock.—1st, William McNeil, 95½; 2nd, Allan Bogue, 94½.
Hen.—1st, Allan Bogue, 94; 2nd, William McNeil, 93½.
Cockerel.—1st, William McNeil, 95; 2nd, Allan Bogue, 93; 3rd, Walker Bros., Port Hope, 90.
Pullet.—1st, William McNeil, 94; 2nd, Allan Bogue, 93½; 3rd, Walker Bros., 91½.

POLANDS—G. OR S.

Cock.—1st, Allan Bogue, 91½; 2nd, William McNeil, 91½.
Hen.—1st, Allan Bogue, 94; 2nd, William McNeil, 91.
Cockerel.—1st, Allan Bogue, 95½; 2nd, William McNeil, 93½; 3rd, Fred Field, 92½.
Pullet.—1st, William McNeil, 94; 2nd, Allan Bogue, 93½; 3rd, Fred Field, 91½.

POLANDS—WHITE.

Cock.—1st, Allan Bogue, 91½; 2nd, William McNeil, 89½.
Hen.—1st, William McNeil, 96; 2nd, Allan Bogue, 91½.
Cockerel.—1st, William McNeil, 93½; 2nd, Allan Bogue, 92½.
Pullet.—1st, William McNeil, 94½; 2nd, Allan Bogue, 92.

POLANDS—G. BEARDED.

Cock.—1st, William McNeil, 90½; 2nd, Allan Bogue, 90.
Hen.—1st, Allan Bogue, 92; 2nd, William McNeil, 91.
Cockerel.—1st, Allan Bogue, 93½; 2nd, William McNeil, 90.
Pullet.—1st, William McNeil, 94½; 2nd, Allan Bogue, 91½.

POLANDS—S. BEARDED.

Cock.—1st, William McNeil, 93; 2nd, Allan Bogue, 92.
Hen.—1st, Allan Bogue, 94; 2nd, William McNeil, 92½.
Cockerel.—William McNeil, 92; 2nd, Allan Bogue, 91½.
Pullet.—1st, Allan Bogue, 94; 2nd, William McNeil, 91½.

POLANDS—W. BEARDED.

Cock.—1st, William McNeil, 90.
Hen.—1st, Allan Bogue, 95½; 2nd, William McNeil, 95.
Cockerel.—1st, William McNeil, 92½; 2nd, Allan Bogue, 92½.
Pullet.—1st, William McNeil, 94; 2nd, Allan Bogue, 90½.

POLANDS—BUFF LACED.

Cock.—1st, William McNeil, 93; 2nd, William McNeil, 92.
Hen.—1st, William McNeil, 94; 2nd, William McNeil, 93½.
Cockerel.—1st, William McNeil, 94; 2nd, William McNeil, 92½; 3rd, William McNeil, 92½.
Pullet.—1st, William McNeil, 92½; 2nd, William McNeil, 92; 3rd, William McNeil, 91.

RED CAPS.

Cock.—1st, F. H. Brown, 91; 2nd, J. S. Niven, London, 88½; 3rd, C. J. Daniels, 88.
Hen.—1st, F. H. Brown, 94; 2nd, C. J. Daniels, 89½; 3rd, F. H. Brown, 89½.
Cockerel.—1st, J. S. Niven, and special, 94½; 2nd, F. H. Brown, 93; 3rd, F. J. Matson, Toronto, 92½.
Pullet.—1st, Fred A. Garfat, Port Hope, 92; 2nd, C. J. Daniels, 90; 3rd, F. J. Matson, 89½.

A. O. V. FOWLS.

Cock.—1st, H. B. Donovan; 2nd, C. J. Daniels.
Hen.—1st, Richard Oke, 2nd, C. J. Daniels.
Cockerel.—1st, H. B. Donovan; 2nd, Richard Oke; 3rd, C. J. Daniels.
Pullet.—1st, H. B. Donovan; 2nd, H. H. Walker, Port Hope; 3rd, C. J. Daniels.

CROSS BREEDS.

Cockerel.—1st, James Parsons, Osaca; 2nd, C. J. Daniels; 3rd, James Parsons.
Pullet.—1st, James Parsons; 2nd, James Parsons; 3rd, J. L. Corcoran.

TURKEYS—BRONZE.

Cock.—1st, William Main, 96; 2nd, W. J. Bell, 95½; 3rd, W. J. Bell, 94½.
Hen.—1st, W. J. Bell, 98.
Cockerel (1895).—1st, W. J. Bell, 96; 2nd, William Main, 92.
Pullet (1895).—1st, William Main, 96½; 2nd, W. J. Bell, 95½.

TURKEYS—W. OR B.

Cock.—1st, W. H. Reid, 93.
Hen.—1st, W. H. Reid, 92.
Cockerel (1895).—1st, W. H. Reid, 93.
Pullet (1895).—1st, W. H. Reid, 92.

GEESE—TOULOUSE.

Gander.—1st, Allan Bogue, 96; 2nd, Knight & Osborne, 92; 3rd, W. H. Reid, 90.
Goose.—1st, Allan Bogue, 95; 2nd, Knight & Osborne, 93; 3rd, W. H. Reid, 92.
Gander (1895).—1st, Allan Bogue, 97.
Goose (1895).—Allan Bogue, 97.

GEESE—BREMEN.

Gander.—1st, William Main, 97.
Goose.—1st, William Main, 97.
Gander (1895).—1st, William Main, 96.
Goose (1895).—1st, William Main, 96.

GEESE—A. O. V.

Gander.—1st, W. H. Reid, 94.
Goose.—1st, W. H. Reid, 94.

DUCKS—AYLESBURY.

Drake.—1st, Allan Bogue, 96.
Duck.—1st, Allan Bogue, 95.
Drake (1895).—1st, Allan Bogue, 97; 2nd, Knight & Osborne, 96.
Duck (1895).—1st, Allan Bogue, 96; 2nd, Knight & Osborne, 95.

DUCKS—ROUEN.

Drake.—1st, William Main, 96; 2nd, Knight & Osborne, 94; 3rd, Allan Bogue, 92.
Duck.—1st, William Main, 96; 2nd, William Main, 95; 3rd, Knight & Osborne, 94.
Drake (1895).—1st, William Main, 95; 2nd, Allan Bogue, 94; 3rd, Knight & Osborne, 93.
Duck (1895).—1st, William Main, 97; 2nd, Knight & Osborne, 96; 3rd, William Main, 93.

DUCKS—PEKIN.

Drake.—1st, Allan Bogue, 98.
Duck.—Allan Bogue, 95.
Drake (1895).—1st Allan Bogue, 99; 2nd, John Lawrie, 92.
Duck (1895).—1st, Allan Bogue, 96; 2nd, John Lawrie, 95.

DUCKS—A. O. V.

Drake.—1st, W. H. McGaw, 95; 2nd, W. H. Reid, 93.
Duck.—1st, W. H. McGaw, 95; 2nd, W. H. Reid, 94.
Drake of 1895.—1st. Geo. Bogue, 94; 2nd, W. H. Reid, 92.
Duck of 1895.—1st, W. H. Reid, 93.

HEN EGGS.

1st, James Parsons; 2nd, R. C. Allan, Cobourg; 3rd, James Parsons.

The display of hen eggs, although small, was very good in size and quality.

The 1st prize hens' eggs, 1 dozen—weighed 2 lbs. 1 oz.—Plymouth Rocks.
" 2nd " " " " 1 lb. 15 oz.—White Leghorns.
" 3rd " " " " 2 lbs.—Plymouth Rocks.

The 3rd prize eggs were not so uniform in color as the 2nd, although an ounce heavier in weight, so the judge decided as above.

There were also Black Minorca eggs, 1 lb. 14 oz., and White Leghorns and Black Minorca cross, 1 lb., 14 oz. This is only a start to something that will be very interesting and productive of a great deal of good amongst our members and benefit the poultry industry generally.

PHEASANTS.

ENGLISH PHEASANTS.—1st, Richard Oke.

GOLDEN PHEASANTS.—1st, Richard Oke; 2nd, J. S. Niven.

SILVER PHEASANTS.—1st, Richard Oke; 2nd, J. S. Niven.

DRESSED FOWLS.

DRESSED FOWLS.—1st and 2nd, James Parsons.

DRESSED TURKEYS.—1st and 2nd, Mrs. John Watt; 3rd, Oldrieve & Wilkinson.

DRESSED DUCKS.—1st, Mrs. John Watt; 2nd and 3rd, Mrs. J. Osborne.

PIGEONS.

BLACK CARRIER.—*Cock.*—1st and 2nd, H. B. Donovan. *Hen.*—1st, H. B. Donovan; 2nd, G. J. Dunn, Hamilton.

CARRIER—DUN.—*Cock.*—1st, H. B. Donovan. *Hen.*—1st and 2nd, H. B. Donovan.

CARRIER—A. O. S. V.—*Cock.*—1st, G. J. Dunn; 2nd, H. B. Donovan. *Hen.*—1st, H. B. Donovan.

WHITE POUTER.—*Cock.*—1st and 2nd, W. L. Glidden, Port Hope. *Hen.*—1st and 2nd, W. L. Glidden.

BLUE PIED POUTER.—*Cock.*—1st and 2nd, G. A. Buckle. *Hen.*—1st, G. A. Buckle; 2nd, W. L. Glidden.

BLACK PIED POUTER.—*Cock.*—1st and special, W. L. Glidden; 2nd, J. H. Magill. *Hen.*—1st, J. H. Magill; 2nd, W. L. Glidden.

YELLOW OR RED POUTER.—*Cock.*—1st, J. H. Magill; 2nd, W. L. Glidden. *Hen.*—1st and 2nd, J. H. Magill.

SHORT FACED TUMBLER.—*Cock.*—1st and 2nd, H. B. Donovan. *Hen.*—1st, H. B. Donovan; 2nd, J. H. Baulch.

A. O. V. TUMBLER.—*Cock.*—1st and 2nd, H. B. Donovan. *Hen.*—1st, Chas. Massie; 2nd, H. B. Donovan.

RED BARB.—*Cock.*—1st, H. B. Donovan. *Hen.*—1st and 2nd, H. B. Donovan.

BLACK BARB.—*Cock.*—1st, H. B. Donovan. *Hen.*—1st, H. B. Donovan.

A. O. S. C. BARB.—*Cock.*—1st and 2nd, H. B. Donovan. *Hen.*—1st and 2nd, H. B. Donovan.

WHITE TRUMPETER.—*Cock.*—1st and 2nd, J. H. Baulch. *Hen.*—1st and 2nd, J. H. Baulch.

TRUMPETER—A. O. S. C.—*Cock.*—1st and 2nd, J. H. Baulch. *Hen.*—1st and 2nd, J. H. Baulch.

Red or Yellow Jacobin.—*Cock.*—1st and 2nd, Chas. Massie. *Hen.*—1st and 2nd, Chas. Massie.

White Jacobin.—*Cock.*—1st and 2nd, Chas. Massie. *Hen.*—1st, 2nd, and special, Chas. Massie.

A. O. S. C. Jacobin.—*Cock.*—1st, Chas. Massie; 2nd, G. A. Buckle. *Hen.*—1st and 2nd, Chas. Massie.

R. C. Antwerp.—*Cock.*—1st and 2nd, H. B. Donovan. *Hen.*—1st and 2nd, H. B. Donovan.

Silver Dun Antwerp.—*Cock.*—1st and 2nd, H. B. Donovan. *Hen.*—1st and 2nd, H. B. Donovan.

White Fantail.—*Cock.*—1st and 2nd, Chas. Massie. *Hen.*—1st and 2nd, Chas. Massie.

Blue Fantail.—*Cock.*—1st, W. H. Reid. *Hen.*—1st, W. H. Reid.

A. O. S. C. Fantail.—*Cock.*—1st, W. H. Reid. *Hen.*—1st, W. H. Reid.

Show—Homer.—*Cock.*—1st, G. J. Dunn; 2nd, H. B. Donovan. *Hen.*—1st and 2nd, G. J. Dunn.

Magpie.—*Cock.*—1st and 2nd, H. B. Donovan. *Hen.*—1st and 2nd, H. B. Donovan.

Swallow.—*Cock.*—1st and 2nd, H. B. Donovan. *Hen.*—1st and 2nd, H. B. Donovan.

Dragoon.—*Cock.*—1st and 2nd, H. B. Donovan. *Hen.*—1st and 2nd, H. B. Donovan.

Archangel.—*Cock.*—1st, W. H. Reid. *Hen.*—1st, W. H. Reid.

Nun.—*Cock.*—1st, H. B. Donovan; 2nd, W. H. Reid. *Hen.*—1st, W. H. Reid; 2nd, H. B. Donovan.

Owl.—*Cock.*—1st and 2nd, H. B. Donovan. *Hen.*—1st and 2nd, H. B. Donovan.

Turbit.—*Cock.*—1st, H. B. Donovan; 2nd, J. H. Baulch. *Hen.*—1st, H. B. Donovan; 2nd, J. H. Baulch.

A. O. S. V. Pigeons.—*Cock.*—1st and 2nd, H. B. Donovan. *Hen.*—1st and 2nd, H. B. Donovan.

Rabbits.

Lop Eared.—*Buck.*—1st and 2nd, William Fox, Toronto. *Doe.*—1st and 2nd, William Fox.

Dutch.—*Buck.*—1st, H. B. Donovan; 2nd, William Fox. *Doe.*—1st, William Fox; 2nd, H. B. Donavan.

A. O. V.—*Buck.*—1st, William Fox; 2nd, H. B. Donovan. *Doe.*—1st, H. B. Donovan; 2nd William Fox.

CARE OF ADULT FOWLS.

By Mr. Thomas Rice, of Whitby.

Allow nature to assert itself. Do not pamper your fowls. As a rule, shun "Poultry Foods," condition powers and medicines.

I herewith submit a few definite instructions on feeding for winter laying. Provide a few essentials in the care of adult fowls, and there should be little trouble in handling large numbers successfully. Poultry are naturally vigorous and hardy, but their constitutions can be ruined by imagined kindness. It is not, for example, true kindness to subject adult fowls to artificial heat. They do not need it. As a rule they will suffer from it. To subject fowls to artificial heat (which renders them tender) and then to turn them out into even moderate weather, is almost sure to bring on colds, throat trouble and roup. It is the fowls that become gradually hardened to cold that are able to withstand it and pass through the winter in good health. Have your houses closely built so that no draught can strike the fowls at night; keep the houses free from bad ordors; protect the fowls from from lice, mites or other vermin; keep them at work as much as possible; feed sparingly of proper foods, and you need not dread disease in your flocks. These

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hings are essential. Provide them and you will meet with smooth sailing. Poultry houses should be cleaned often enough to keep down the bad odors. In summer time (especially during damp weather) clean out two and three times a week, according to your accommodation and the number of fowls kept. In winter time, twice or even once a week will do if your houses are properly constructed and your fowls not over-crowded. Over-crowded fowls require far more attention than those not crowded. Clean off the dropping boards every morning. Slack lime is an excellent disinfectant. Use as a lime sifter, an ordinary tin can with nail holes punched in the bottom. A separate scratching pen is a grand thing for fowls—one that has an open side to the south—but in winter time, by all means feed all grain in litter of some kind and do not spare the litter. Have it deep. Use straw, chaff, leaves, weeds, corn fodder—anything will do if you have enough of it. Make your fowls work by keeping them hungry through the day. Send them to bed with full crops at night (especially in winter), but be sparing enough of food of all kinds in the day time to keep them on the move, to keep them hunting and scratching for more. Have them so that they will eat up clean all that you give them, and then follow you to the door or gate looking for more.

Every fall we thoroughly clean our poultry houses, removing all the litter and also also three inches of the soil. We then put in three or four inches of fresh, sweet earth or sand. This is put in the house during dry weather and under the constant scratching of the fowls, becomes fine dust. Road dust contains too much horse manure to suit us and we doubt if is healthful for fowls. We are certain that we do not like to inhale it ourselves, hence we advise dry, fresh, clean soil in place of road dust.

Fowls that do not scratch, and scratch with energy, need looking after. They may be sickly. They are either out of condition or are being over-fed, It is an easy matter to over-feed the larger breeds of fowls, especially the Asiatics. The more active birds can stand more food than the big lazy breeds, for the latter pile on the fat with ease. They stand the cold better and are more contented in confinement—two things that are conducive to fat.

Dust is a paralyzer of lice. Lice will not remain in a cloud of dust. With plenty of fine dust handy, the fowls will them themselves save you the trouble and annoyance of fighting vermin. In the fall, when we put in fresh earth and fresh litter, we carefully whitewash the inside of the houses putting an ounce of carbolic acid in every gallon of the wash. Fill all the cracks and crevices. Be liberal with the wash, it is cheap; and lice are the source of sixty per cent. of the losses in poultry.

In feeding poultry, the first thing to decide is what am I feeding for?

If you have thoroughbred stock only, and are intending to furnish eggs for hatching purposes alone, then you do not want to force winter laying, for the demand for your eggs will be much better and at higher prices during the spring months—during March, April and May. In this case, it may become necessary to shift your fowls from pen to pen during January and February to prevent their beginning to lay too early. If you wish to conduct an egg farm, as some farms are called, it will be to your advantage to force laying during November, December, January, February and March, when the market price is high for eggs for food, and to do this you must do two things: hatch out each spring a large number of early pullets, and then feed them for eggs the coming fall and winter. An egg farm pays well. The price of eggs never falls below the cost of production, while in the fall, winter and early spring from one hundred to two hundred per cent. can be made on every egg laid. It requires thought, system in feeding and extra care to secure a large number of eggs during this time, and that is why there is money to be made in this branch of the business. A market always exists everywhere for fresh eggs. No one need go a-begging with a basket or case of fresh laid eggs, especially in winter time. Every human habitation contains a customer. On an egg farm, rightly conducted, $100 worth of feed can be readily converted into $300 worth of eggs in a month's time. Hotels and restaurants in cities are ever ready to buy or to contract for eggs that are guaranteed to be fresh. In a city, a person can work a private trade at so much a dozen, the year around.

SELECTION AND CARE OF POULTRY FOR PROFIT.

Mr. H. W. Page, St. Marys.

The selection of poultry for the purpose for which you require them needs some very careful consideration as the field for choice is very large, and a great deal depends upon the locality in which you live and the amount of comfort and care you can and are willing to give them.

If you cannot give your birds warm, or at least well-sheltered and clean quarters, you should avoid fowls with large combs and wattles and long bare legs, as these are almost sure to freeze in very cold weather and cause great distress in your flock ; to recover from which your birds will use up such an amount of time and vital force as to very materially diminish the winter supply of eggs and delay their spring work very much.

As a bird has passed its best when two and one-half or three years old, she should be kept in such condition as to be able to give the very best service up to that age, and any delay which may occur during her short life of usefulness cannot be made up by keeping her for a longer period. So that in order to keep out of the freezing business I would urge the selection of birds of such breeds as have the least possible amount of those appendages (wattles and combs), and would advise you to give the birds broad flat perches, so that the toes may be spread out flat and covered with the body feathers at night. Also have the perches thick, say four inches, so as to prevent the frost from striking through the bottom.

Do not put your perches too high ; about two feet or two feet six inches is about right. If perches are much higher than this heavy birds are not able to get on them without an undue amount of exertion, and often after several ineffectual attempts will give it up in disgust not only with herself but with her surroundings, and will sneak off into the most available corner and squat down ; and should it so happen that she is able to mount the perch there is danger of injury on decending in the morning and more especially in the winter when the ground is hard. The disease known as bumblefoot is caused more in this way than in any other, and is especially prevalent among heavy birds. Internal injuries are also very liable to occur from this dropping down from high perches, particularly with hens in the laying season.

I would say here most emphatically that high perches are only suitable to light birds which are well able to fly.

With regard to food you must of course take into account what you are feeding for, whether for eggs or meat. If for meat you need not trouble much about shell-forming material, and can feed almost an entire grain diet. I say almost, because some green food is always desirable and beneficial, and a variety of grain must be fed, and the morning meal must be ground and mixed with either hot water or hot milk, and to such a degree of moisture as to make it stay in a ball when pressed in the hand, and feed just as much as will be eaten up clean. Should any be left in the feeding trough when the birds are quite satisfied, it should be removed and the trough should be made quite clean or it will soon turn sour.

The noon meal may be of whole grain thrown on the scratching floor in order that the birds may take some exercise which is necessary as well for fattening birds as for laying hens.

The late afternoon meal should be of whole grain and as much as they will eat, but none should be left.

Plenty of clean water must be available at all times so they may never become very thirsty. Plenty of fine gravel must also be provided as this goes to the hen's mill and helps to break down the large grains and renders them more digestible.

If you are feeding for eggs this food must of course be supplemented by some ground oyster shell, and cut or ground green bone, and the drinking water should always be hard and not soft water; and some meat scraps should always be fed two or three times a week. Some ground charcoal mixed in the morning meal will tend to keep the stomach sweet and prevent bloating.

When birds are moulting some stimulant such as red or black pepper should also be added to the morning feed, and a little Douglas mixture added to the drinking water two or three times a week.

The poultry house should have an abundance of sunlight, be well ventilated and provided with a good dust bath of dry road dust or coal ashes.

A Few Reasons.

Water.—The reason for giving laying hens hard water is this: Ordinary well water as a rule contains lime and magnesia in about the same proportions as they are found in the shell of the egg.

Bone.—The bone contains all the elements contained in the egg, not only in the shell but in the white and yolk, and their instinct seems to teach them to leave any other food for cut or ground green bone at any time.

Meat Scraps.—Meat scraps are necessary in the winter to take the place of the animal food the fowls can procure in the summer in the shape of insects, worms, etc. For the same reason it is necessary in the summer when hens are kept in confinement.

Dust Bath.—The dust bath is the very best method of keeping poultry free from vermin, especially if a little sulphur or carbolic powder is mixed with it.

Sunlight.—There are millions of disease germs which multiply rapidly and thrive in dark places which cannot live in the sunlight so that one of the best aids we can call in for the prevention of disease is the direct rays of the sun.

Lime.—Lime can be made very useful in the poultry house. Good fresh lime made into a white wash with a little carbolic acid mixed in it will make the inside of the house clean and healthful, and a little air-slaked lime sprinkled on the floor tends to keep it dry.

Douglas Mixture.—A very good thing to prevent roup, or to cure mild cases, is made as follows: Take two gallons of water, one pound of sulphate of iron and one ounce of sulphuric acid. Mix all together and stir or shake occasionally till dissolved. To a flock of ten or twelve hens give two or three tablespoonfuls in the drinking water two or three times a week.

A Few Don'ts.

Don't keep more fowls than you can properly care for.

Don't keep any more than one breed unless you have ample facilities for keeping them separate.

Don't keep fowls unsuited to your locality or the purpose for which you need them.

Don't try to raise birds for the show pen until you have acquired the necessary skill.

Don't try to raise birds by the use of the incubator and brooder until you understand the delicate and complicated process of incubation.

Don't debit the poultry with all they cost for food and care unless you credit them with all they return you for home consumption and what you sell.

Don't expect to be as successful when you first start as the man who has been in the business for many years.

Don't keep hens after they are three years old. After that age they will not pay for their keep much less will they give a profit. But limit the age to two or at most two and one-half years.

Don't allow birds affected with contagious disease to mingle with the rest of the flock. If badly affected it will pay to kill than to try to cure, unless in the case of valuable birds.

Don't let laying hens get too fat, as they are liable to lay soft shelled eggs and very few of them.

Don't feed the morning meal too hot as the birds may scald themselves. As hot as you can comfortably bear your hand in it would be about right, and

Don't make it sloppy.

Don't expect hens to make eggs without supplying them with the necessary material.

Don't breed from weakly hens, as the chicks will be hard to raise and be sickly when they are raised, and to get the best results birds must be vigorous.

Don't fail to observe young hens, and note those that have the most desirable qualities for your purpose, and breed from them only.

Don't allow your poultry manure to spoil by allowing the ammonia to escape, but remove it from the poultry house every day and store it under cover and put some kanit and dry pulverized clay with it. This will save the ammonia and supply potash, of which poultry manure is deficient.

Insects.

There is one service which the poultry on a farm render to their owner which is not often thought of, and not once in a hundred cases do the birds get any credit for it. I mean the destruction annually of hundreds of thousands of insects. This service is best rendered when poultry have the free run of the farm.

I suppose most of you have noticed that where large flocks of turkeys are kept, and locusts and grasshoppers are plentiful, the birds will require very little food from the owner but will feed on the pests mentioned, thereby reducing by so much the devastation committed; and I have noticed that in the years locusts are most plentiful the turkeys grow to a larger size and are fatter than in years when locusts are not so plentiful, and this leads me to believe that if more birds are kept we should have fewer locusts.

If poultry must be confined the orchard is the best place to do it in, and if the trees are jarred to shake off worms the birds will soon learn to follow you round and will pick up and eat the worms as fast as they fall, thus rendering the double service of destroying the insects and supplying themselves with animal food.

TURKEYS.

By W. J. Bell, Angus.

During the past year I have met a great many who assert that they are unable to sell their large turkeys at the same price as small ones. I must admit that turkeys weighing from ten to fourteen pounds are in more demand at present for the Canadian market than ones weighing from sixteen to twenty pounds. But let me ask you, is this the market turkey breeders should cater to? I say emphatically, "No," for it is impossible for this market to use the large number of turkeys now raised in Canada. The market you should aim to please is the English market, which is in no danger of being overstocked, and that market demands the heaviest turkeys you can produce. It is possible, with the best stock to start with and good care while growing, to have bronze turkeys weighing, cockerels twenty to twenty-five pounds, and pullets thirteen to sixteen pounds at December first, the same being hatched the previous June. That is the time they will have to be sold to reach England in good time for the Christmas demand, and the price has not been lower than seven cents per pound in any section that I know of. Take nineteen pounds as an average of the large ones at seven cents per pound, and twelve pounds as an average of small ones at nine cents per pound, and you will find a difference in favor of the former and with the advantage of being marketed a full month

earlier. The extra food fed during this month, if distributed carefully among the flock while growing would cause them to reach the weights mentioned by December first, as up to this date they have very little cold weather to contend against; and always provided you start with a strain know to reach good weights. Feed your breeders sparingly from the middle of March and set their eggs under turkeys, dusting the hen well with insect powder when doing so. Also give the hen another dusting two or three days before the poults hatch. Leave them in the nest twenty-four hours after hatching, and then remove to a large box—the larger the better. Place the hen and her young in this, and cover on top with loose boards. I only open the boards while feeding to give them light to eat, and not enough to let the hen fly out. I keep them here just one day unless it is a very cold time, when I may leave them an extra day. My idea for taking them to this box is to teach them to eat out of my hand—a very important point in my estimation, for I feed them entirely up to five months of age their soft food out of my hands, and there is never any left to sour on the ground. After I take them out of the box I place the hen in a coop with no bottom and lath front for the poults to run in and out of at will, and I move this coop the breadth of itself every day at noon when the ground is warmed with the noonday sun, and I keep the grass eaten closely where I have the flock. Sheep are the best to crop it down and they never tramp a turkey poult. I have a fence near the coop for the young to run under when they get the warning cry from the old one, and a scare-crow standing close to the coop is of use in keeping away crows and hawks. I keep the hen in this coop until the poults are about five weeks old. A place for them to dust in is a necessity.

Regarding food, I may say that I have noticed so many successful breeders of turkeys each advocating a different food that I have come to the conclusion that the kind of food is not so important as their getting it often and regularly. While in the box I feed mine nearly every hour, commencing with bread soaked in milk, and start towards night to add a little shorts or middlings. When placed in coop I feed five times per day, and gradually drop out the bread from their ration and make it all shorts mixed with milk, sweet or sour, and cut up onions or dandelion in it twice per day. This is their food until five weeks old. They have nearly all the milk they will drink, and a creek runs near their coop giving them plenty of water and always fresh. Be careful and do not let any salt enter their food, or you will have the pleasure (?) of burying all who get it. After five weeks of age the hen is given her liberty and all are allowed to roam over the farm at will. They are fed shorts in the morning and good clean wheat at night, but when grasshoppers are plentiful they will often refuse the wheat. Give them all the wheat, oats and peas they will eat during October and November, together with their morning feed of shorts, and I feel sure you will have them the weights mentioned at the beginning of this article. As a great many breeders advocate letting the hen have full liberty from the start, I would say that my idea for putting her in coop is to prevent her taking the young into long wet grass in the early morning, or being caught out in rain, wet being fatal to the poults; and I think the poults will roam as much as is good for them until five weeks old without the hen. Have a broad board to cover the lath front of coop each night to save them from cats, etc. The important points I believe are :—
1. Start with a large strain. 2. Dusting with insect powder, and dust bath for young.
3. Feeding out of the hand. 4. Moving coop every day.

JUDGING AND TOWNSHIP FAIRS.

By T. J. Senior, Hamilton.

In anticipation of this meeting of our Association and its undoubted importance on poultry culture throughout the Province, it occurred to me that some good might be accomplished by directing attention to the inferiority of the usual exhibits at township fairs.

At the outset let me place on record an acknowledgment of our gratitude as an Association to the Provincial Legislature for the encouragement it has given us in our efforts toward the improvement of poultry culture in the Province. This year the

usual grant of $900 was supplemented by an additional grant of $500 for the supplying of coops and other accommodations, and throughout the history of our Association our hands have continually been strengthened by the Department of Agriculture.

Our own efforts as an Association have been earnest and sustained. We have given all the encouragement in our power, have had essays prepared by members directing attention to the benefits of breeding, mating, and care of poultry; but it is a deplorable fact that the encouragement of the Legislature, the efforts of the Association, the influence of the poultry journals, have counted for very little in the improvement of the stock in the rural districts. Those of us who have been honored with judgeships at local poultry shows may be excused for becoming disheartened when it is shown how utterly regardless of all the rules of poultry breeding the majority of the exhibitors are. The birds, as a rule, are poorly bred, and unmistakeable evidences of their mongrel origin are visible to the eye of even unexperienced spectators. They are half cared for, and are often dumped into the show and left without either food or water, and are handled as though they were building timber. The chief object of their presence in the show seems to be to catch the prize through a knowledge of the fact that the exhibitors' scrubs are as good as his neighbors, and the neighbor may not think it worth while to put his on exhibition. The classes, however, are usually filled and the prize money paid out without the slightest effort toward the improvement of the stock.

For this unfortunate state of affairs poultry fanciers are themselves somewhat to blame. Owners of exhibits have in former years or at other shows been awarded prizes for their birds, and the consciencious judge is at once accused of having some sinister motive in disqualifying birds that he knows have not one single claim to his notice; there is at once a feeling of dissatisfaction, and unkind words are often said.

To remedy these conditions I will throw out one or two suggestions and trust that subsequent discussion will result in some benefit concerning the question. First, I would advocate a united action on the part of every judge of poultry on occasions such as I have mentioned. I maintain that a bird disqualified should not score a point. I would make the American standard final and absolute, and every exhibit not coming up to it I would refuse to consider worthy a place in the exhibition. The result, I think, would be that knowing the slipshod method of the past had been abandoned, exhibitors would see the necessity of improving their stock or the folly of bringing them to the fair. In the meantime much good money would be saved to the Association to be put to good use when that better day had arrived. This Association, I maintain, has no right to spend the money of the Province without showing some return, and up to the present time no adequate return is visible for the expenditure made.

Second. It behooves every poultry fancier and every one interested in the subject to meet exhibitors and endeavor to get them into the local association, to interest them in the work of improvement, to tell them what he has heard, to show them what he has seen, and to give them that personal encouragement which goes far toward conviction.

The writer, two years ago, observing the state of affairs at the Central Fair in Hamilton, asked the directors to hang up better prizes to poultry exhibitors. I was one of two delegates from our local Association, and we advocated the idea so strongly that the directors were willing to assist us, but they found a difficulty in the fact that exhibitors of other stock complained about our request of $100 as being too much to grant to the poultry department. We offered if they made the grant to exact an entrance fee of ten cents a bird, and on the principle that heaven helps them who help themselves, they made us the grant. I was made an honorary director of the fair, and chairman of the poultry show, and had the extreme pleasure of seeing the best display of poultry ever collected in the vicinity at a township fair. Last year we had a grant of $150 and an improved display, and next year we are confident of a further increase in the grant and hope for a further improvement in the exhibit.

I have collected these stray thoughts in the hope that they may not be uninteresting to you, and that they may result in some benefit on the lines along which we are striving for improvement.

OUR CANADIAN HEN, AND HOW TO FEED HER.

By C. J. Daniels, Toronto.

The hen is literally an egg machine, her chief purpose being the production of eggs. Like any other kind of machine, she must have the raw material with which to manufacture her products. Her instinct teaches her how to select. All that is necessary is to place within her reach that which she requires and everything will be well. To produce an egg the hen must have a certain kind of food for the yolk, or fat portion, known as carbonaceous, and for the white she needs food rich in nitrogen, from which she makes albumen. For the shell she needs lime. Thus, while we may feed a hen liberally (apparently), by omitting to allow that which is needed to complete the laying process, she may remain idle for the want of a single substance, though fully supplied with everything else that is necessary.

It has been proved beyond a doubt that green-cut bone forms the most perfect food for egg production. It is not a stimulant or a medicine, but is simply a perfect food which has in it every constituent of the eggs; and the hen, instead of having to wait days or weeks to accumulate enough material from common food to make the egg, finds just what is wanted in green bone, and in consequence she just can't help laying. Here is a grand opening for our farmers to make good money in the winter months, and with a very small outlay. We notice in our Toronto papers last week that fresh eggs could not be got in sufficient quantities to supply the demand. If every farmer in Ontario took as much care of his hens as he does of his other stock, we would soon have those large ships packed full of fresh Canadian eggs for the English market. They want them, but at present we cannot supply them. Farmers will talk the old chestnut, "There's no money in hens." Let me give you one of many instances that it can be done: Mr. W. R. Graham, Bayside, Ont., wrote me about the middle of January, 1896, as follows: "I have broken my bone mill. Kindly send me another leg. I have 150 laying hens, and am getting from seventy to eighty eggs per day." He adds: "This, I believe, is largely due to my feeding green-cut bone."

Now, friends, how many eggs were you getting from your hens at the above date? and why can't you go and do likewise? There is no patent on egg production, and there are good bone mills now in the market that can be bought for $7 each, and bone from the butcher's at half a cent per pound. One more very essential thing: The hen is neglected in being given grit. Hens have no teeth, and during winter, when everything is frozen up, they must have grit if you want eggs, and would also save your young chicks.

Give a chick when only a few hours old grit where they can get to it, and you will be surprised to see them go into it as though it was something else, and they will thrive better on it. If you do not give them the requirements of nature you may expect to find some dead ones among your brood every day or so.

They will be taken with bowel trouble, and you will wonder why it is, as you have fed them everything that is fresh and clean; but they did not have what they required to grind up their food, and so it got sour and clogged up the passage way, and before it could pass off, killed them. You will find grit one of the most essential of all your feeds, and should always be before them. Wm. McNeil, of London, the veteran poultry breeder, says mica grit is one of the best things poultrymen ever struck. The chemical analysis of mica grit shows it to contain most valuable substances. Over fifty-seven per cent. is white quartz, which is extremely hard and sharp pointed, which for grinding is unequalled by any available material. In addition to this large proportion of grinding material, the rock shows over eleven and a half per cent. of iron oxide and ten per cent. of magnesium. The former is a valuable tonic, strengthening and invigorating the system, and the latter is for sweetening the stomach and gizzard. Grit tones up the fowls, reddens the combs and wattles, produces healthy action of the bowels, and an immediate improvement in condition, and an increased egg yield will almost certainly follow its use.

VENTILATING AND HEATING POULTRY HOUSES IN WINTER.

By C. F. Wagner, Toronto.

Most breeders in erecting poultry houses build too lofty a structure. A poultry house should not exceed eight feet in height at the highest point, and not more than three or four feet at the lowest side. Every house should have a sleeping compartment, or cupboard, so to speak, with a door hinged at the top to close up in very frosty weather, the door being left a little open at the bottom for ventilation.

The construction of ventilators in poultry houses is one of the most difficult problems to solve. Many make a common error by having openings in opposite sides of the building, causing a draught, which is very injurious to fowls, bringing on disease in many flocks. Ventilators should be small and in one side of the building only. Say a pen is four by twelve feet in size, the hole at the floor line where the fowls pass in and out will act as one ventilator. Put another at the roof, or ceiling, about eight by ten inches with a slide, or small sash, in same, which could be closed on very cold or damp days and at nights. This will be found ample ventilation and without draughts. Make all openings in the south side of the building, if practicable.

Closely built hen houses which are not artificially heated in cold weather if not ventilated will be found with frosty walls and dampness from the breath of the hens.

Dampness will stop hens from laying and in many instances bring on roup. To overcome dampness breeders will find that dry air-slaked lime strewn on the dropping board under the perches will help to absorb the moisture and will also answer as a purifier.

If the walls of the hen house are covered outside with tarred felt and battens nailed over the joints, the structure will be perfectly watertight as well as windproof, dampness and wind being two of the greatest evils the poultryman has to contend with. It is money well spent to tar-felt the inside of the house, all joints being well lapped To heat a four by twelve foot hen house an ordinary lamp placed underneath a common "T" stove-pipe on a shelf, with a wire screen placed in front to prevent accidents, will be found to heat sufficiently in a few hours, when the light may be extinguished until such times as the room cools off. This need only be used when the thermometer stands below zero (outside) during the day time. A well-made sleeping room, just large enough to comfortably roost the number of birds kept in a compartment the size mentioned, if closed up at night, will be warm enough to keep their combs from freezing without artificial heat when it is away below zero outside. Another mistake poultrymen make in building a hennery is that they either have the building all in one room or else they have only wire divisions between the pens. The former may be satisfactory, providing not more than a dozen hens are kept in a space six by twelve feet. A larger space with many more birds running together will not be as profitable in egg production. In the latter case where a hennery is divided up into pens with wire netting it will be found draughty. These divisions and enclosures should be made of tight boarding, so that no draughts could blow nor disease spread from one pen to another, should the latter ever have access.

EGGS IN WINTER.

By A. G. Gilbert, Central Experimental Farm, Ottawa.

Prices are high in the larger cities for new laid eggs in winter. The farmer ought to make revenue from his hens at that time, but in too many cases his poultry department is non-productive. The following instructions are intended to aid the farmer in making his hens lay when their produce is worth the most.

1. The laying stock should be under two and a half years of age. Why? Because hens over that age, of the Asiatic breeds such as Brahmas, Cochins, and Langshans, and

the Plymouth Rocks, Wyandottes and Javas, of the American breeds, moult so late that it will be well into winter before they will begin to lay. Meanwhile much of the profit they will afterwards make, will have been eaten up.

2. The laying stock should be comfortably housed. It should be remembered that if the layers are keep in a cold house, that the food instead of going into eggs will be drawn upon to supply animal heat. A temperature high enough to keep the water from freezing is all that is necessary.

3. While feeding to make the egg, material must also be supplied to make the shell. Of course we are supposing the fowls cannot run out, as in summer. Cut-green bones is an admirable ration for supplying lime for the shell and material for the egg. Grit of some sort is also necessary. It enables the hen to grind up her food in her gizzard. It must be borne in mind, that the hen has no teeth and grit is what she uses instead.

4. Another necessity is a dust bath, so that the hen can keep hereIf free from lice. Lice-infested hens are not money makers. Fine sand, earth, road dust or fine coal ashes all being perfectly dry, will answer the purpose.

5. The laying stock should be keep actively employed searching for the grain food. This can be promoted by throwing the grain rations into straw, chaff, dry leaves, or other litter that should always be on the floor of the house. The floor should be of wood because it is likely to be drier than one of earth. An earth floor is apt to become damp and to remain so all winter. A cabbage should be suspended from the ceiling, so arranged that the fowls will have to jump for it.

6. The chill should be taken off the drink water during winter, two or three times daily. If possible prevent the drink water from freezing. Laying hens require a liberal supply of pure water.

7. It must be rembered that the laying stock in our winter season—often lasting from December to April—lead an artificial life. It should be the aim to make the conditions of that artificial life as like the natural, or outdoor life as possible, by supplying the laying stock with what they will pick up for themselves, when running at large.

8. The necessity for supplying material to make the egg shell will soon make its want evident. If you feed nothing but grain, the hen will shortly lay an egg with a thin shell ; and if this hint be not acted upon, soon an egg will be laid with a soft shell, and then one without any shell at all ! These are all nature's hints that there is not lime, or egg shell forming material enough in the rations. Besides, the constant feeding of grain will make the layers too fat. What is wanted, then, is variety, combined with economy in the egg producing rations. The following will be found to answer admirably :

Morning Ration.—Cut-green bones three times per week. The green bones are those usually given, or thrown away by butchers. The bones are CUT up—not *ground* up—by mills manufactured for the purpose. On the other mornings of the week give a warm mash composed of whatever ground grains are most abundant and cheapest on the farm. To this mash add the table and kitchen waste. Feed only enough of this to *barely satisfy*, not enough to *gorge*, and mix it so that it will be *crumbly*. Never feed it in a *sloppy* state. The cut bone should be feed in the proportion of one pound to fifteen hens.

Noon Ration.—After the morning cut bone or warm mash ration, scatter a few handsful of grain in the litter on the floor so as to start the hens scratching. The noon ration should be just enough grain to keep the hens actively scratching. If you have Asiatics or Plymouth Rocks feed oats. If possible, keep the hens busy from morning to dark.

Afternoon Ration.—The layers should be sent to roost with their crops full. They have a long night fast before them. This last ration should a generous one, and should be fed early enough to allow the hens searching for it after it has been thrown among the litter.

The Philosophy of Feeding.

The aim should be to so manage that the hens will be kept in activity all the day, gradually filling up their crops. They should not be allowed to *gorge on one* ration.

Substitute for Cut-Green Bone.

We have already stated that cut-green bones are the best egg producing ration, because they contain egg and egg-shell forming constituents. If it is not possible to obtain cut-green bone, then meat in some shape will have to be supplied. Bullocks' heads, lights and livers are not expensive, and should be boiled and cut up and fed to the laying stock in the proportion to two ounces to each layer.

Other Essentials.

There are always unmarketable vegetables of some kind on the farm and they can be put to good use by feeding to the layers. Green stuff in some shape is a necessary essential in the winter production of eggs. Cabbages, turnips, carrots, mangels, etc., etc., are all valuable. Clover, red or white, is always in abundant supply on the farm. Steamed and mixed with the morning mash, or fed alone, it is an invaluable article of winter diet. We want more green stuff, more variety in the treatment of our winter layers and less grain. We want, in other words, intelligence, perseverance and knowledge in the winter care and management of our fowls.

The Poultry House.

The hen house is very often the dirtiest and most neglected building on the farm. Too frequently it is infested with vermin. Lice on the laying stock and the production of eggs in winter, or chickens in summer, do not go together. The poultry house should face the south so as to admit as much sunshine and light as possible during the winter months. And it should not be over-crowded. The great tendency is to over-crowd the premises. If the laying stock are over-crowded there will be few eggs. Allow the layers as much room and range as possible, but this should not be done at the expense of comfort at night. Laying hens are better kept out of the snow. If the sun shines brightly and warmly in shed or barn during the day in winter, the fowls might be allowed to the bright place. But if the poultry house is up to date in construction there will be no necessity for the hens to leave the building. Plans for up to date premises may be had on application. It is a matter of very great moment to have the winter house properly constructed so as to afford every opportunity for exercise, and so arranged as to prevent egg eating and feather picking, two vicious habits fowls in long confinement and badly arranged houses are apt to form.

Incentives to Egg Production.

In the large cities high prices are given for new laid eggs in winter. And new laid eggs of superior flavor will also find ready sale, at higher prices, during the summer season. The eggs for the summer market should be unfertilized, collected twice every day and put on the market as quickly as possible. Meanwhile they must be kept in a cool cellar, or place, with a sweet atmosphere. Too much care cannot be exercised in placing the eggs on the summer market. And in packing away eggs it must be remembered that the egg must be fresh and sweet when packed away, in order that it may remain so. If the egg is of bad flavor when packed away no subsequent tender care will make that bad egg good.

Chickens.

Early chickens of large growth and fine quality will find ready purchasers at higher prices. Good customers will always be found for superior poultry. Farmers, with the proper knowledge of care and feed, will have no trouble in getting Plymouth Rock,

Wyandotte, Java, Indian Gamé or Dorking chickens to weigh four pounds each, or eight pounds per pair at the end of four months. Indeed, all the chickens of the standard breeds will make good return for proper care and management. It must be borne in mind that as the country grows older, the demand for better things at better prices will became more general. Farmers in the neighborhood of large cities should cater to the higher taste of the people of wealth in these cities with a superior article, which ought to bring a higher price. And there is no reason why the great mass of toilers, in the cities, should not be able to purchase new laid eggs in winter at a reasonable price, and there yet remain a paying margin to the farmers! Certainly, new laid eggs will always be scarce and high in price, in the great cities, so long as the farmers do not produce them. The aim of the practical poultryman to-day is to reduce the cost of production, so that it will be quite possible for the farmer to sell, at a reasonable price, his new laid eggs in winter, and yet have the same margin of profit he had before. Green bones and clover hay are two important means to that end.

Markets.

As it is, our winter markets, in the colder parts of our Dominion, are comparatively undeveloped and high prices prevail. I have a correspondent, an enterprising farmer, who not only sells his own eggs, but buys from all the surrounding district; ships to a good man in a city and so makes money for himself and pays money out to those he buys from. I speak of a winter trade. Then he goes into the non-fertilized, new laid egg, with superior flavor for a summer trade. He supplies every farmer he buys from with a stamp wherewith to stamp his (the seller's) name on every egg.

Then there are the English and United States markets, the latter a little demoralized.

Last year England alone expended *twenty-two millions of dollars* in France, Denmark, Germany, Southern Russia and other European countries for eggs and poultry. Could we not bring seven or eight of those millions into this country? We have only to conform with the conditions in order to do so. There are millions of dollars in poultry for farmers of the country.

EASTERN ONTARIO

POULTRY AND PET STOCK ASSOCIATION.

OFFICERS FOR 1896.

President.....GEORGE HIGMAN .....Ottawa, 309 Rideau Street.

1st Vice-President .....G. S. OLDRIEVE .....Kingston.

2nd Vice-President.....C. J. DEVLIN .....Ottawa, 42 Turner Street.

Secretary-Treasurer .....FRANCIS H. GISBORNE.....Ottawa, 69 Mackay Street.

Auditors .....{ E. DAUBNEY .....Ottawa, P. O. Dept.
S. SHORT .....Ottawa, P. O. Dept.

Board of Directors.

C. W. YOUNG .....Cornwall.

JOHN MASON.....Ottawa.

E. A. CONNELL.....Ottawa.

J. C. SMITH .....Hintonburg.

F. J. BLAKE.....Almonte.

JAMES JACQUES .....Ottawa.

W. M. OSBORNE.....Brockville.

WM. GRAY .....Ottawa.

LT.-COL. HON. M. AYLMER ..Ottawa.

LIST OF MEMBERS FOR 1896.

Name.	Address.	Breeds exhibited.
Benjamin, E	Ottawa	Buff Plymouth Rock.
Devlin, C. J	"	Barred Plymouth Rocks.
Aylmer, Lt.-Col. M	"	Barred and White Plymouth Rocks.
Gisborne, F. H	"	White Wyandottes, White Turkeys.
Rogers, C. C	"	
Gray & Baldwin	"	Buff Leghorns, Game Bantams.
Higman, G	"	White and Gold Laced Wyandottes.
Smith, J. C	"	Bronze Turkeys.
Connell, E. A	"	S. C. Brown Leghorns.
Jacques, J	"	Barred Plymouth Rocks, Buff Cochin Bantams.
Daubney, E	"	Gold Laced Wyandottes.
Mason & Sons, J	"	White Plymouth Rocks and Pigeons.
Oldrieve, G. S	Kingston	(See Oldrieve & Williams).
Blake, F. J	Almonte	Buff Cochins, Silver and Golden Wyandottes.
Osborne, Wm	Brockville	White Minorcas, S. C. White and Black Leghorns, R. C. Leghorns, Indian Games, S. S. Hamburgs and Seabright Bantams.
Gill, J. 1	Ottawa	S. C. Brown Leghorns.
Blyth, A. A	"	S. C. White Leghorns.
Shouldis, A. H	"	S. C. Brown Leghorns.
McLaughlin, G	"	
Manuel, J	"	
Perley, H. S	St. Albans, Vt., U.S.	Gold Laced Wyandottes.
James, Fred	Ottawa	Barred Plymouth Rocks, Guinea Fowl, Rabbits and Guinea Pigs.
Grimes & Allen	"	S. C. White Leghorns.
Taylor, E. L	"	S. C. White Leghorns.
Murphy, E. F	"	R. C. Black Bantams.
Cossitt & Co	Brockville	Buff Cochins, Partridge Cochins, Dorkings, White and Golden Wyandottes, Black Spanish, S. C. Brown Leghorns, Golden Polands, Buff Cochin Bantams, Pit Games and Pekin Ducks.
Sinclair, R	Kingston	Black and White Minorcas, S. C. White and Buff Leghorns, R. C. Leghorns, Black and S. S. Hamburgs.
Craig & Jourdin	Almonte	Black Langshans, S. C. White Leghorns.
McGregor, Keyes	"	Silver L. Wyandottes, Andalusians and Black Minorcas.
Meldrun, Thos	Hull, Q	Light Brahmas.
Cawdron, H. G	Ottawa	Black Langshans.
Haven, G. M	Toronto	Black Minorcas.
Oldrieve & Williamson	Kingston	Light Brahmas, Black Langshans, White Langshans, Barred and White P. Rocks, Silver, White and Golden Wyandottes, Black Minorcas, R. C. Brown Leghorns, Games, Black Hamburgs, Houdans, Redcaps, Game Bantams, Golden Seabright, R. C. Black and Booted White Bantams.
Selwyn, P. H	Ottawa	Buff Cochin Bantams.
Burroughs, R	Toronto	Pigeons.
Reid, W. H	Kingston	Partridge Cochins, Black and White Javas, Dorkings, Andalusians, Black and White Minorcas, R. C. Leghorns, Black and Golden Pencilled Hamburgs, Sebright, R. C. Black and Buff Cochin Bantams, China Geese, White Turkeys, Ducks and Pigeons.
Noden, A	Toronto	Dorkings.
Drummond, Alex	Petite Cote, Q	Dorkings, Silver and White Wyandottes, Black Spanish and Dorkings.
Short, S	Ottawa	White Wyandottes and Barred Plymouth Rocks.
Cumming, D	Russell	S. S. Hamburgs, S. C. Brown Leghorns, Turkeys, Ducks and Geese.
Fortier, D	Montreal	Buff Cochins, W. C. Black Polands, Golden and Silver Polands, Houdans, White and Buff Laced Polands, Sebright, Buff Cochin, Japanese and Poland Bantams.

LIST OF MEMBERS.—*Concluded.*

Name.	Address.	Breeds exhibited.
Teague, Joel	Ottawa, East	W. C. Black Polands.
Bonneville, U.	Danville, Q	Dark Brahmas, Partridge Cochins, Games, Game Bantams, Buff Cochin Bantams.
York, Geo	Ottawa	Black Spanish.
Keyes, P. G	"	Pigeons.
Ashworth, J	"	Light Brahmas, Black Minorcas, Dorkings, Barred P. Rocks, Black Langshans, White Leghorns and Pekin Ducks.
Garland, B	Hintonburg	White Javas, Barred P. Rocks and S. C. White Leghorns.
Stewart, A	Hull, Q	Pekin Ducks and Light Brahmas.
Young, C. W	Cornwall	White Javas.
Thompson, A	Allan's Corners, Q	White P. Rocks, Turkeys, Ducks and Geese.
Bennett, M	Ottawa	Silver Polands and Buff Leghorns.
Maveity, R	"	S. S. Hamburgs and Light Brahmas.
Nettbohm, P	"	White Leghorns.

ANNUAL REPORT

OF THE

EASTERN ONTARIO POULTRY AND PET STOCK ASSOCIATION.

To the Honorable the Minister of Agriculture for Ontario:

SIR,—I have the honor to inform you that the Twelfth Annual Exhibition of the Eastern Ontario Poultry Association was opened at Ottawa on Tuesday, the twenty-first of January, and closed on Friday, the twenty-fourth. The exhibition was very successful and it is only proper to state that the success is largely due to the immense amount of both manual and other work that is performed gratuitously by a number of the members of the Association and particularly by the majority of the local directors. If all that is done had to be paid for, the financial status of the Association would be in a very different condition. The Directors, by whom the main work of the Association is carried on, receive no remuneration whatever, either directly or indirectly, nor is there any privilege attached to the position.

The exhibition was larger than that of last year, the exhibit of useful poulty showing a very decided improvement. The display of turkeys, ducks and geese was the best ever exhibited by the Association. There were seventy-four birds in the coops, while the quality was particularly good.

In revising the prize lists for the last exhibition, it was carefully borne in mind that the main object of the Association was the encouragement of useful as opposed to ornamental breeds of poultry. Classes were added, too, for dressed poultry and eggs. There was a very good exhibit of eggs, both in the colored and white classes, so much so that there can be little doubt that they must be considered as a necessary feature of any future exhibition. No entry fees were charged for either eggs or dressed poultry. The date of holding the exhibition is too late in the season to secure a large exhibit of dressed poultry; all the best stock is taken by the Christmas markets, and owners are unwilling to kill good birds after keeping them for so great a portion of the winter, for any birds that are worth keeping so long are too valuable for breeding purposes to be killed for any prize money that the Association could afford to offer.

Mr. Sharp Butterfield, of Windsor, Ontario, was the judge of the poultry, and the members of the Association are again indebted to him for the great trouble he took in not only deciding on the merits of the rival birds, but in explaining the reasons for his decisions, and also for his kindness in giving advice and information to all who desired it. The judging was not merely an awarding of the prizes, but a series of valuable lectures upon the different breeds of poultry and how they should be bred and fed to produce the best results.

In the exhibition held in 1895, there were seventy-two classes for pigeons; five members entered exhibits dividing among them $63.50 in prize money. In view of the fact that the Association was in receipt of a Government grant in the interests of practical poultry keeping, the members of the Association did not feel justified in maintaining such a prize list, and this year it was reduced to twenty-two classes, and the prizes were given for pairs instead of single birds. This change gave a great deal of dissatisfaction to the local fanciers, and they in consequence declined to send any exhibits whatever, the only exhibitors being Mr. R. Burroughes, of Toronto, and Mr. W. H. Reid, of Kingston. It is a matter of grave consideration whether the offering of prizes for pigeons, except in so far as the prize money may be contributed by those interested, should not be entirely abandoned, as the keeping of pigeons as practiced in Ontario

cannot be said to be in any sense an agricultural industry, and it is not one, therefore, that the Association is justified in assisting with money bestowed by the Government in the interests of agriculture.

At the recent exhibition, by the kindness of Professor Saunders, Director of the Canadian Central Experimental Farm, and Mr. A. G. Gilbert, the Poultry Superintendent, an exhibit was made of cross-bred poultry, the result of some experiments at the Farm, and also an exhibit of eggs.

A day or two after the close of the exhibition a letter was received from the private secretary of His Excellency the Governor-General, regretting that owing to an accidental oversight leading to a misapprehension as to the date of the holding of the exhibition their Excellencies had not visited the exhibition, and making an appointment for a personal interview with the undersigned at Government House. At the interview His Excellency expressed the very kindest interest in the Association, particularly after he had learned that the main object was the practical improvement of poultry. His Excellency mentioned that at Haddo House, his home in Scotland, a range of poultry houses had been built with the primary object of improving the breeds of poultry in the whole of the surrounding district. The Haddo House poultry yard, over which Her Excellency the Countess of Aberdeen exercises special supervision, has been very successful, many prizes having been won, not only at local shows, but also at some of the larger shows in the United Kingdom, such as that at Birmingham. His Excellency intimated that he desired to present a cup during each of the remaining years of his term of office in Canada to be competed for at the annual exhibition. His Excellency wishes the conditions of competition for the cup to be framed by the Directors, although he suggests that the breeds which should be specified might be those recognized as best adapted for the country from the practical farmer's point of view. This very kind and generous gift from His Excellency will be of the greatest value to the Association and will have a most beneficial effect in drawing attention to the poultry industry.

Under the Act passed at the last session of the Ontario Legislature it will be necessary to hold the next exhibition at some point not less than forty miles from Ottawa. It has therefore been decided to hold the next exhibition at Kingston. Apart from the question of expense, the great majority, if not the whole of the members of the Association, are much in favor of the change as being one likely to increase the membership of the Association, and as widening and extending its useful and educational powers. The financial question is, however, one of great importance, as there can be no doubt that the expense of moving coops, etc., from one place to another will be very considerable, while in places outside of Ottawa it is yet to be seen whether the same amount of gratuitous assistance will be available. At the recent exhibition the entire putting up of the coops and the building of the temporary coops was done by the members without any charge, while some of the members were, I might almost say, constantly on hand during the whole exhibition rendering whatever assistance might be required. Then, too, the proximity of Kingston to the great western poultry breeders will, it is anticipated, draw a great many more entries which will add to the cost of the exhibition ; a large number of coops and extra attendants being required. However, as there are many enthusiastic poultry breeders at Kingston, they will, perhaps, do whatever may be requisite with respect to the running of the exhibition.

Meetings are held by the Association at Ottawa on the first Mondays of each month during the year, except the months of June, July and August, and at these meetings discussions are held upon topics connected with the poultry industry, and I enclose herewith three papers that were read before the Association. I also enclose financial statement for last year, a list of the officers and the prize list at the recent exhibition.

The whole respectfully submitted.

FRANCIS H. GISBORNE,

Secretary-Treasurer.

OTTAWA.

THE DUTY OF POULTRY ASSOCIATIONS TO THE FARMER.

By E. H. Benjamin, Ottawa.

It may seem strange to some of those present that I should select the above heading for my paper, but I look upon poultry associations as being intended for the farmer, and that through the members of these associations the Government expect in return for the amounts granted that the farmer will be enabled to gain some information as to what he should do in order to improve his stock. He therefore has a claim to their consideration.

The primary object for which these associations were established was that the farmer and those engaged in the breeding and raising of poultry for business purposes, should find in these associations a school wherein knowledge could be obtained. If information has not been more extensively gained, the question naturally arises, who is to blame for it? Perhaps there has been of late years more dilatoriness on both sides than there should have been, the farmer considering his old stock good enough for his purposes, and the associations seeing that the farmer was indifferent and not patronizing the associations, did not exert themselves as was required. The holding of these annual exhibitions I do not look upon as the only object the Government had in view for their existence, and is certainly not the primary object the Government had when giving the grant. It is only a means to the end. Among those prominent in the breeding of fowls, there are always those whose first object is to win prizes. In doing this, they are also an educational medium. They present to the eye what they consider an ideal bird for people to copy. The public see the birds; they become enthusiastic over what they see; they say they would like to have such fowl. They naturally ask, how are they brought to such a state of perfection? They naturally look either to the Association or its members for such information as the breeders are supposed to possess, and through this means of communication, to obtain the required information. This may appear a new idea to some, but I think the Government had some such view when giving the grant. So you see that these associations, through their members, have a duty to perform by reading papers at their monthly or annual meetings, which should contain valuable information and suggestions pertaining to the industry. These papers would, through the Agricultural Department, be distributed amongst the farmers. The latter would then begin to study the nature of the various breeds. They might have amongst their flocks of fowl specimens of some particular breed that would meet their requirements, either as early layers or good table fowl, and yet have no proper knowledge of them; but by reading these papers or hearing discussions, they would be enabled to make a proper selection from amongst their birds, and by this means produce what they really wanted. This is an important matter, and one on which they should have some definite and reliable information. Another important point, and one which they have not a proper knowledge of, is the care and housing of their fowls, and the right kind and correct quantities of food to feed. In order to produce the best results, either for the production of eggs or adding more flesh to the fowl, all these matters are subjects for discussion, and through these discussions the required information is conveyed to the farmer, and educates him in this particular and important branch of his industry, and by increasing his income, adds wealth to the country.

Another point that up to the present time has evidently escaped the attention of the associations, and sooner or later, if the initiative is not taken by them, the attention of the Government may be called to it, and an intimation given that a revision and adjustment of the prize list is advisable, in order that a provision may be made for those breeds raised by the farmers, instead of giving so much to those ornamental breeds that are not fit for market purposes. The grant is given to encourage the development of fowl for market and useful purposes. This is a matter that must now be taken hold of in a firm manner and brought before the associations. Already the farmers are complaining that the prizes offered are not sufficient to warrant them in sending their large birds to the exhibitions. It is a question if a class should not be provided for the farmer for the best all purpose breed raised by them, and have them shown alive and also properly dressed for market.

The poultry industry is now assuming such vast importance that both the Dominion and Local Governments are taking an interest in it, and in a short time the income derived from the sale of poultry and eggs will surpass the most sanguine expectations of its promoters. Look at the good results that our local Association has already produced. Compare our market to-day with what it was a few years ago, and I ask, should we not feel proud at the result? Let us, then, show increased interest in the poultry culture by spreading widecast amongst the farmers such information as will educate them as to what breed of fowls to raise for market purposes at the least cost and most remunerative prices. Let us show to the Government that we are making good use of the amount they grant us. We can then appeal to them for increased aid, and justly say "We are doing our duty; aid us further, and increased good will be the result, by putting it in our power to still further develop this industry."

THE WINTER CARE OF POULTRY.

By C. J. Devlin, Ottawa.

The paper I propose to read this evening deals with the question of feeding and caring for poultry so as to produce the maximum number of eggs during the winter when eggs are worth thirty and forty cents a dozen. First you must provide good warm houses for the poultry—they must be keep warm if you want them to lay. Then cull out the flock and only winter the vigorous ones. It is useless to carry in stock old birds that are late in the moult or weak sickly birds, that show signs of disease. Keep only those that are in the best condition, as these will be a source of profit and not a burden. Remember that one egg in winter is worth four eggs in the summer, and practical people should aim to have their hens lay when eggs are worth the most. Feed a warm mash in the morning of bran, boiled potatoes and turnips with pepper and salt. Be sure not to give a full feed of this for the hens will otherwise be idle until their next meal. Cover the floor of the hen house with six or eight inches of straw, leaves or chaff, and scatter in it a few handfuls of wheat, barley or oats, and make the birds work for the rest of their meal. Hens closed up in the winter must have exercise or they will get fat and will not lay; they must have work for their nature requires it. Twice a week give them meat in their mash, for they need it to help make the eggs. At night give them an ample feed of grain early enough to enable them to go to roost with full crops. Grit is another important thing for your hens; failure to provide grit of some kind is the fruitful cause of indigestion and other internal disarrangements. Glass, earthenware or limestone broken fine are good, but smooth stones are no good whatever; the grit must be sharp and hard.

Next we come to the dustbath. The dustbath is the toilet of the hen and one she enjoys as it frees her from lice and helps to keep her in vigorous health. Make a box about three feet square and about ten inches deep, and fill it within one inch of the top with fine sand or road dust. Coal ashes are good if sifted; but do not use wood ashes, for if the hens get wet it will cause sores on their bodies, and if your birds are a yellow legged variety it will bleach their legs white.

Water is another important thing, for hens require a lot of water—in fact few realize how much water a hen will drink. In cold weather the water should be warmed, so that the birds may not be chilled and to prevent the drinking vessels from being frozen.

A box of old broken mortar is also a good thing to have, as the birds will eat quite a quantity when shut up during the winter.

Be sure and keep your hen house clean and sweet. Look out for lice. Keep your roosts well oiled with coal oil and your house well whitewashed with lime. You will not get eggs if you breed lice, and they are only too easily bred. I say look out for lice.

Keep green food before your hens at all times—cabbages, turnips, beets or some other kinds of vegetables. Your hens must have green food, to keep them in a good condition for laying.

Do not crowd your hens. Do not keep a hundred where there is room for only fifty. Five square eet is little enough for one hen; ten square feet is better. My remarks may seem rambling but if you follow them I am sure you will not make a mistake.

POULTRY HOUSES AND THEIR FURNITURE.

By Francis H. Gisborne, of Ottawa

It generally happens that ordinary poultry keepers—I speak more particularly of those living in cities and towns—do not build their poultry houses. It is usually some stable or shed that is taken, and, as far as the resources and skill of the possessor enables him to do so, is made suitable for the housing of his stock. I will not, therefore, treat of the best form of poultry house, but only make a few remarks with respect to adapting buildings already erected for the keeping of birds in severe winter weather. Supposing a would-be poultry keeper has a shed, which he desires to make warm enough for his birds. The first thing to do is to examine the roof—that must be absolutely watertight. How it is made so matters little. I once rendered an old roof perfectly serviceable by covering it with rough boards, putting the first row a few inches apart and then putting another row over the cracks. If the roof has a fairly good pitch such a covering will be quite weathertight, but unless there is another roof under it it will not be warm enough. There is nothing in my opinion equal to a shingled roof with tarred paper under the shingles. Tarred paper laid on with battens only I have never found would stand—the paper wrinkles and the wind blows and tears it off; though I believe if the tarred paper is given a couple of coats of hot tar it will then be found serviceable, but I have no personal experience of such roof. The walls must be double and unless both the outside and the inside covering of the walls is airtight, or practically so, the hollow space should be filled in with sawdust, tanbark, or some other substance that will not draw up moisture. If coal ashes are used, and are in contact with damp ground at the bottom of the wall, it is astonishing how high the damp will rise in the wall; otherwise ashes will answer very well. Most shed walls are such that the hollow space has to be filled in, and indeed many carefully built walls, which at first are quite tight, get loose and cracked with exposure to sun and frost, and after a few years should be filled in. Every year or two the walls should be examined to see that they are in a good state, and if filled walls to see if they require additional filling. If there are any rats in the building they are most mischievous in burrowing through the filling, leaving channels for the admission of cold and holes at the bottom for the filling to run out of. Having made the roof and walls secure, the next thing is the windows and doors, which should all be double. Wooden shutters, fitted inside of the windows, to be closed at night, will be a great protection in very severe weather, as they prevent the radiation of the heat through the glass. Next comes the much-vexed question of the floor; some prefer earth, some use a cement of lime, ashes and sand in equal parts (ordinary cement being too cold for the feet), while others use sand or a board floor covered with earth or sand. I myself prefer a board floor for the fowl house proper, well covered with straw, leaves or other litter. I believe it is a great mistake in a dry hen house—and every hen house ought to be dry—to use an earth or sand floor even though there should be a board floor under it. When the birds scratch for their food the dust cannot but be objectionable, and unless the earth or sand is frequently renewed will speedily become impregnated with the pulverized droppings of the fowls. Such an atmosphere cannot be good for any animal to breathe. If there is a loft above the hen house it is a good plan to spread three or four inches of sawdust or tanbark on the floor above. This will make the hen house nice and warm. We must not, however, forget the question of ventilation, and the better built the building is, the more important it is to have it properly ventilated. I do not think the plan adopted by our President, Mr. Higman, can be much improved on. He has a metal pipe about four inches in diameter running from close to the floor of the hen house up through the ceiling. Of course this must be supplemented by a thorough airing of the building as often

as the weather will allow. In addition to the fowl house there should always be, if it is at all possible, a scratching shed, which may be built in a very simple and inexpensive manner, as all that is required is a structure wind and water proof. I built one last winter very cheaply. I took thirteen-feet boards, cut them in two and set them up on end like an A tent, nailing them at the top and bottom to longitudinal strips. Two hundred feet of boards made me a scratching shed thirteen feet long and a little over nine feet wide. I paid one dollar and a half for the lumber (mill culls), and I had to buy a few nails and some laths for battening the cracks. For a window I used a hot-bed sash, which of course I put on the sunny side of the roof.

One great and vexed question is the matter of perches. All are agreed that the old ladder perch is bad and that it is a *sine qua non* that there should be a platform under the perches to catch the droppings for convenience of cleaning, and to prevent birds from being soiled when walking under the perches. But beyond that there is a great divergence of opinion; there are advocates of flat perches, of round, of big and of small. However, the majority of poultry keepers, I think, use a perch of about two inches by one and a half, with the corners rounded; at any rate I am willing to think so, as that is about the dimensions of what I use. Some of my perches are, however, a little larger than that. For turkeys I use a perch three inches by two. For fastening them I use a device of my own, of which I think more highly since so experienced a fancier as Mr. Mason approved of it and used it himself. The sketch (Fig. 1) will show the principle upon which it works. During the day it can be folded up against the wall. At the Central Experimental Farm a folding perch is used (Fig. 2), but to my mind it has several disadvantages. It very soon becomes unsteady, there being so many joints to work loose. Then, too, there is nothing to prevent birds being crowded off the ends of the perches. I saw what seemed to me to be a very good kind of perch described in a recent poultry paper, in which the perch was supported by wires running from the ceiling to the floor, pieces of rag dipped in coal oil being fastened to the wires to prevent insects from passing along them to the perches.

The matter of nests is like, or indeed worse than, the question of perches. There can be no doubt, however, that for setting hens the nests should be single, so that the moment a brood is hatched the nest can be removed without disturbing another hen, otherwise insects pass from one hen to the other, and the hen which hatches the last brood will carry away the accumulation of insects from all the other hens with, of course, fatal results to the majority of her chickens. As long as the nest is large enough, and in a quiet secluded corner, any kind of a contrivance will answer every purpose for a laying hen. The entrance to the nest should be as much as possible out of sight, for the laying hen does not like to be watched or disturbed, and if it is out of the way there is less danger of there being any egg-eating among the flock. I think it is better that the nest should not be on the floor, but hung at a sufficient height to prevent birds standing on the floor from pecking at eggs in the nest.

For troughs for feeding I think the old "V" trough without any ends (Fig. 3), is the best. It is easily cleaned, too. When there are ends it is almost impossible to keep it clean. For holding grit I use a long shallow box 3x3x24 inches, fastened to the wall of the hen-house so that it cannot be upset or soiled. For the dust bath I have a box I got at my grocer's, about 24x30x8, but I find that in severe weather the fowls will not use it unless the sand or earth is warmed. For a water fountain nothing equals the Tomlinson fountain—a circular shallow dish in which stands a hollow metal cone with its base slightly smaller than the dish, say an inch or so, with a hole at its base at the height at which the water is intended to stand in the dish. You fill the cone with water, place the dish upside down upon top of it, and then reverse both, when the water will flow out of the cone into the dish up to the level of the top of the hole.

A fountain upon this principle is made in which the reservoir, instead of being cone-shaped, is flat on the top and in which the reservoir is soldered to the dish. This is objectionable for the birds fly on top of the reservoir and soil the water, and the reservoir cannot be thoroughly cleaned.

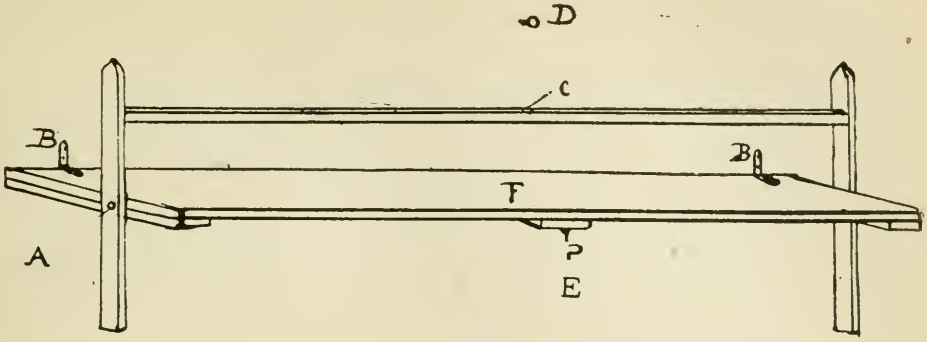


Fig. 1.

A, pivot: BB, hinges to be fastened to wall; C, perch; D and E, hook and staple to fasten perch to wall when it is folded up; F, platform to catch droppings.

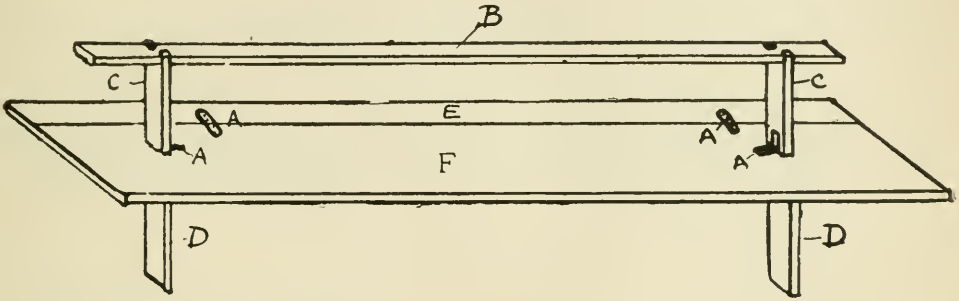


Fig. 2.

AA, hinges; B, perch; C, supports of perch hinged to fold down on platform F for catching droppings; D, hinged legs to support dropping board; E, strip fastened to wall to which dropping board is hinged.

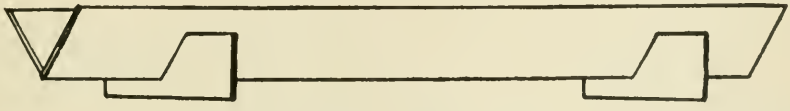


Fig. 3.—The "V" Feeding Trough.

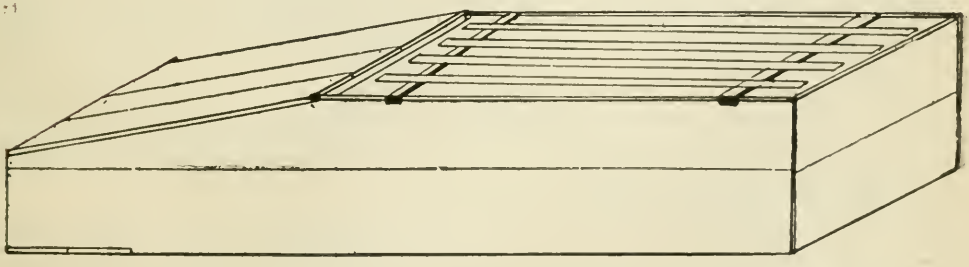


Fig. 4.—Coop for Brooding.

Many different kinds of coops are used for cooping the hen when brooding small chickens. Most people use any old box they may happen to have with a few boards to keep the rain out, and laths nailed up in front at proper distances to keep the hen in and let the chickens run in and out. Last year, however, I was troubled with a chicken-killing dog, and I devised a coop that was very cheap and satisfactory, (Fig. 4). It was made of thirteen feet boards cut in two for the sides, and in three for the ends, roof and floor at the back. Floors are not often used in coops on account of the difficulty of cleaning, but I found that it was a decided advantage. The top of the coop was made with laths and was moveable. In this coop the hen had plenty of room to scratch and dust herself. When the chickens got strong I used to block up the front of the coop when they could run in and out just as well as they could in an ordinary coop, while on wet days I used to put a few boards over the whole coop and hen and chickens had plenty of room to move about in without getting wet. Most of the coop having no bottom it could, with advantage, be moved on to fresh ground every day or so. But treating of coops reminds me that one of the most important accessories of the fowl-house is one or two large coops in which birds can be placed temporarily, to prepare them for exhibitions or to isolate male birds. I have a couple of large coops in my hen-house which are built some feet off the ground, so that the floor space is not in anyway encroached upon, and as they are suspended from the roof there are no legs to interfere with the cleaning of the floor. My coops are ten feet by three and seven feet by three. But I made them unusually large as I often keep the male birds in them for long periods.

In conclusion I may state that though fowls will live and often, up to a certain point, thrive under the most disadvantageous surroundings, yet to be thoroughly successful, and to make the birds do their best, they must be carefully and skilfully treated, and the practical poultryman will always be eager to take advantage of every improvement, whether it is in appliances or in methods of management.

FINANCIAL STATEMENT.

Alfred Geddes, Treasurer, in account with the Eastern Poultry and Pet Stock Association for the year ending September, 1895.

Receipts.	$ c.	Disbursements.	$ c.
Balance from previous year	1 30	Paid for Prizes	320 50
Members' fees	51 00	Officers salaries	60 00
Donations	32 00	Postage and stationery	18 86
Legislative grant	400 00	Printing and advertising	47 60
Receipts from exhibition	158 05	Judges' expenses	61 25
Interest	6 85	Coops, trestles, etc	130 44
		Feed, fuel, light at exhibition	14 65
Balance due treasurer	44 92	Help at exhibition	19 00
		Cartage	8 00
		Sundries	13 82
	694 12	Total	694 12

Examined and found correct.

March 2nd, 1896.

E. Daubney
Francis H. Gisborne. } Auditors.

PRIZE LIST.

Light Brahma.

Cock.—Oldrieve & Wilkinson, 1st, 92½; R. Maveity, 3rd, 86½.
Hen.—Oldrieve & Wilkinson, 1st, 92½; Thomas Meldrun, 2nd, 88½.
Cockerel.—Oldrieve & Wilkinson, 1st, 93.
Pullet.—Oldrieve & Wilkinson, 1st, 93½.

Dark Brahma.

Cock.—U. Bonneville, 1st, 90.
Hen.—U. Bonneville, 1st, 90½.
Cockerel.—U. Bonneville, 1st, 90½.
Pullet.—U. Bonneville, 1st, 91.

Buff Cochin.

Cock.—Cossitt & Co., 1st, 91½.
Hen.—V. Fortier, 1st, 92; Cossitt & Co., 2nd, 88; V. Fortier, third, 86½.
Cockerel.—V. Fortier, 3rd, 85½.
Pullet.—F. J. Blake, 1st, 90½; V. Fortier, 2nd, 90; F. J. Blake, 3rd, 90.

Partridge Cochin.

Cockerel.—U. Bonneville. 2nd, 89½; Cossitt & Co.. 3rd, 88½.
Pullet.—U. Bonneville, 2nd, 87½; Cossitt & Co., 3rd, 87.

Black Langshans.

Cock.—Oldrieve & Wilkinson, 1st, 91½.
Hen.—Oldrieve & Wilkinson, 1st, 93½.
Cockerel.—Oldrieve & Wilkinson, 1st, 94; H. G. Cawdron, 2nd, 92; Craig & Jourdin, 3rd, 91.
Pullet.—H. G. Cawdron, 1st, 91½.

White Langshans.

Cockerel.—Oldrieve & Wilkinson, 2nd, 88.
Pullet.—Oldrieve & Wilkinson, 1st, 91.

Java—White.

Hen.—W. H. Reid, 1st, 90.
Pullet.—B. Garland, 2nd, 87.

Dorking.

Cock.—A. Noden, 1st, 92; W. H. Reid, 2nd, 91.
Hen—W. H. Reid, 1st, 93½; A. Noden, 2nd, 93.
Cockerel.—Cossitt & Co., 1st, 93; A. Noden, 2nd, 92½.
Pullet.—A. Noden, 1st, 94½.

Barred Plymouth Rock.

Cock—Oldrieve & Wilkinson. 1st, 91.
Hen—C. J. Devlin, 1st 94; E. L. Taylor, 2nd, 91; Oldrieve & Wilkinson, 3rd, 90½.
Cockerel.—Oldrieve & Wilkinson, 1st, 92; J. Jacques, 2nd, 91; S. Short, 3rd, 90½.
Pullet.—Oldrieve & Wilkinson, 1st, 93½; J. Jacques, 2nd, 93½; C. J. Devlin, 3rd, 92½.

White Plymouth Rock.

Hen.—J. Mason & Son, 1st, 93½; Oldrieve & Wilkinson, 2nd, 92.
Cockerel.—Hon. M. Aylmer, 2nd, 89.
Pullet.—J. Mason & Son, 1st, 93½, and 2nd, 90½; Oldrieve & Wilkinson, 3rd, 89.

Silver-Laced Wyandottes.

Cock.—Keyes & McGregor, 1st, 93½; F. J. Blake, 2nd, 89½.
Hen—Oldrieve & Wilkinson, 1st, 91½; F. J. Blake, 2nd, 88; Keyes & McGregor, 3rd, 80½
Cockerel.—F. J. Blake, 2nd, 89, and 3rd, 88.
Pullet.—F. J. Blake, 1st, 92, and 2nd, 90.

WHITE WYANDOTTES.

Cock.—F. H. Gisborne, 1st, 92, and 3rd, 86.
Hen.—G. Higman, 1st, 95, and 2nd, 94; Oldrieve & Wilkinson, 3rd, 92.
Cockerel.—G. Higman, 1st, 93; F. H. Gisborne, 2nd, 91; S. Short, 3rd, 91.
Pullet.—G. Higman, 1st, 93½; F. H. Gisborne, 2nd, 91½; S. Short, 3rd, 91½.

GOLDEN-LACED WYANDOTTES.

Cock.—Oldrieve & Wilkinson, 1st, 90; H. S. Perley, 2nd, 88½.
Hen.—G. Higman, 1st, 94; Oldrieve & Wilkinson, 2nd, 92½; H. S. Perley, 3rd, 87.
Cockerel.—G. Higman, 1st 93, 2nd 92½, and 3rd 90½.
Pullet.—G. Higman, 1st, 94½, and 2nd, 94; Oldrieve & Wilkson, 3rd, 92½.

BLACK SPANISH.

Hen.—Cossitt & Co., 1st, 90, and 2nd, 88½.

ANDALUSIAN.

Cock.—W. H. Reid, 2nd, 89½.
Hen.—W. H. Reid, 1st, 93.
Cockerel.—Keyes & McGregor, 1st, 95, and 2nd, 93.
Pullet.—Keyes & McGregor, 1st, 93½.

BLACK MINORCA.

Cock.—G. M. Haven, 1st, 93½.
Hen.—G. M. Haven, 1st, 92½.
Cockerel.—Keyes & McGregor, 1st, 92½; G. M. Haven, 2nd, 91½.
Pullet.—G. M. Haven, 1st, 94; Keyes & McGregor, 2nd, 93½; Oldrieve & Wilkinson, 3rd, 87½.

WHITE MINORCA.

Hen.—W. M. Osborne, 1st, 90; R. Sinclair, 2nd, 90; W. M. Osborne, 3rd, 85.
Cockerel.—W. M. Osborne, 2nd, 89½.
Pullet.—R. Sinclair, 2nd, 88.

S. C. WHITE LEGHORN.

Cock.—Grimes & Allen, 1st, 91; W. M. Osborne, 2nd, 89; A. A. Blyth, 3rd, 85½.
Hen.—Grimes & Allen, 1st, 93½; A. A. Blyth, 2nd, 90, and 3rd, 89.
Cockerel.—R. Sinclair, 1st, 92½; W. M. Osborne, 2nd, 90½; Craig & Jourdin, 3rd, 90½.
Pullet.—Grimes & Allen, 1st, 93½; A. A. Blyth, 2nd, 93; R. Sinclair, 3rd, 92½.

S. C. BROWN LEGHORN.

Cock.—Cossitt & Co., 1st, 90.
Hen.—Cossitt & Co., 1st, 90; J. I. Gill, 2nd, 87½.
Cockerel.—J. I. Gill, 1st, 91½.
Pullet.—D. Cumming, 1st, 92½; J. I. Gill, 2nd, 92½; Cossitt & Co., 3rd, 91½.

BLACK LEGHORN.

Cock.—W. M. Osborne, 1st, 91½.
Hen.—W. M. Osborne, 1st, 91½.
Pullet.—W. M. Osborne, 1st, 93½, and 2nd, 91½.

BUFF LEGHORN.

Pullet.—R. Sinclair, 1st, 90.

ROSE-COMB LEGHORN.

Cock.—W. H. Reid, 2nd, 89.
Hen.—Oldrieve & Wilkinson, 1st, 92; R. Sinclair, 2nd, 91½; W. M. Osborne, 3rd, 90½.
Cockerel.—Oldrieve & Wilkinson, 93½; R. Sinclair, 2nd, 92½.
Pullet.—Oldrieve & Wilkinson, 1st, 94½; W. M. Osborne, 2nd, 91½.

BLACK-RED GAME.

Cock.—Oldrieve & Wilkinson, 1st, 94; U. Bonneville, 2nd, 93½.
Hen.—Oldrieve & Wilkinson, 1st, 92½; U. Bonneville, 2nd, 92.
Cockerel.—U. Bonneville, 1st, 90½.
Pullet.—Oldrieve & Wilkinson, 1st, 93½; U. Bonneville, 2nd, 92, and 3rd, 92.

BROWN-RED GAME.

Cock.—Oldrieve & Wilkinson, 1st, 93.
Hen.—Oldrieve & Wilkinson, 1st, 95½.
Cockerel.—Oldrieve & Wilkinson, 1st, 94.
Pullet.—Oldrieve & Wilkinson, 1st, 92.

DUCKWING GAME.

Cock.—Oldrieve & Wilkinson, 1st, 92.
Cockerel.—Oldrieve & Wilkinson, 1st, 93½; U. Bonneville, 2nd, 90½.
Pullet.—U. Bonneville, 1st, 93½; Oldrieve & Wilkinson, 2nd, 93.

RED PYLE GAME.

Hen.—Oldrieve & Wilkinson, 1st, 93; U. Bonneville, 2nd, 90½.
Cockerel.—U. Bonneville, 2nd, 89½.
Pullet.—Oldrieve & Wilkinson, 1st, 94½; U. Bonneville, 2nd, 89½.

INDIAN GAME.

Cock.—Oldrieve & Wilkinson, 1st, 94½.
Hen.—Oldrieve & Wilkinson, 1st, 93; W. M. Osborne, 2nd, 88½.
Cockerel.—Oldrieve & Wilkinson, 1st, 90.
Pullet.—Oldrieve & Wilkinson, 2nd, 88½.

OTHER STANDARD VARIETIES OF GAME.

Cock.—Oldrieve & Wilkinson, 1st, 91½.
Hen.—Oldrieve & Wilkinson, 1st, 92½.

BLACK HAMBURGS.

Cock.—Oldrieve & Wilkinson, 1st, 93½; R. Sinclair, 2nd, 92½.
Hen.—Oldrieve & Wilkinson, 1st, 95; R. Sinclair, 2nd, 89½.
Cockerel.—W. H. Reid, 1st, 95; Oldrieve & Wilkinson, 2nd, 94½.
Pullet.—W. H. Reid, 1st, 94; Oldrieve & Wilkinson, 2nd, 89½.

GOLDEN PENCILLED HAMBURGS.

Cockerel.—W. H. Reid, 1st, 90½.
Pullet.—W. H. Reid, 2nd, 87.

SILVER SPANGLED HAMBURGS.

Cock.—D. Cumming, 1st, 90½; R. Maveity, 2nd, 89.
Hen.—D. Cumming, 1st, 93½; W. M. Osborne, 2nd, 90½; R. Maveity, 3rd, 88.
Cockerel.—R. Sinclair, 1st, 94½; D. Cumming, 2nd, 90½.
Pullet.—R. Sinclair, 1st, 93; D. Cumming, 2nd, 90½.

WHITE CRESTED BLACK POLISH.

Cock.—V. Fortier, 2nd, 88.
Hen.—V. Fortier, 1st, 94½, and 2nd, 92½.
Pullet.—V. Fortier, 1st, 93½, and 2nd, 93½.

GOLDEN POLISH.

Cock.—V. Fortier, 1st, 92, and 2nd, 91; Cossitt & Co., 3rd, 88.
Hen.—V. Fortier, 1st, 93½, and 2nd, 91½; Cossitt & Co., 3rd, 91.
Cockerel.—Cossitt & Co., 1st, 91; V. Fortier, 2nd, 89½.
Pullet.—V. Fortier, 1st, 92, and 2nd, 92; Cossitt & Co., 3rd, 88½.

SILVER POLISH.

Cock.—V. Fortier, 1st, 91; M. Bennett, 2nd, 90.
Hen.—M. Bennett, 1st, 91½.
Pullet.—V. Fortier, 1st, 92½.

HOUDAN.

Cock.—V. Fortier, 1st, 93.
Hen.—V. Fortier, 1st, 93, and 2nd, 91½; Oldrieve & Wilkinson, 3rd, 90½.
Pullet.—V. Fortier, 1st, 91½; Oldrieve & Wilkinson, 2nd, 91½.

RED CAP.

Cock.—Oldrieve & Wilkinson, 2nd, 87,
Hen.—Oldrieve & Wilkinson, 2nd, 89½.
Pullet.—Oldrieve & Wilkinson, 1st, 91.

OTHER STANDARD VARIETIES.

Hen.—V. Fortier, 1st, 95.
Cockerel.—V. Fortier, 1st, 92, and 2nd, 91½.
Pullet.—V. Fortier, 1st, 92½.

BANTAMS—BLACK RED. GAME.

Cock.—Oldrieve & Wilkinson, 1st, 92½.
Hen.—Gray & Baldwin, 1st 94, 2nd 94; Oldrieve & Wilkinson, 3rd, 91½.
Cockerel.—Oldrieve & Wilkinson, 1st, 95½; Gray & Baldwin, 2nd 94, 3rd 93.
Pullet.—Oldrieve & Wilkinson, 1st, 95; Gray & Baldwin, 2nd 94½, 3rd 93½.

BANTAMS—BROWN RED. GAME.

Cock.—Gray & Paldwin, 1st, 92½; Oldrieve & Wilkinson, 2nd, 91½.
Hen.—Oldrieve & Wilkinson, 1st, 94; Gray & Baldwin, 2nd, 91½.
Pullet.—Gray & Baldwin, 1st, 92½.

BANTAMS—DUCKWING. GAME.

Cock.—Oldrieve & Wilkinson, 1st, 93; Gray & Baldwin, 2nd, 92½.
Hen.—U. Bonneville, 1st, 94; Oldrieve & Wilkinson, 2nd 92½; Gray & Baldwin, 3rd, 91.
Cockerel.—U. Bonneville, 1st, 94½; Gray & Baldwin, 2nd, 94.
Pullet.—U. Bonneville, 1st, 94.

BANTAMS—RED PYLE. GAME.

Cock.—Gray & Baldwin, 1st, 91.
Hen.—Gray & Baldwin, 1st, 93; Oldrieve & Wilkinson, 2nd, 92½.
Cockerel.—Gray & Baldwin, 1st, 93½; Oldrieve & Wilkinson, 2nd, 93; Gray & Baldwin, 3rd, 92½.
Pullet.—Gray & Baldwin, 1st, 93; Oldrieve & Wilkinson, 2nd, 92½; Gray & Baldwin, 3rd, 91.

BANTAMS—GOLDEN SEBRIGHT.

Cock.—V. Fortier, 1st, 93; Oldrieve & Wilkinson, 2nd, 90.
Hen.—V. Fortier, 1st, 93; Oldrieve & Wilkinson, 2nd 91.
Pullet.—W. H. Reid, 1st, 91.

BANTAMS—SILVER SEBRIGHT.

Cock.—W. H. Reid, 1st, 91; V. Fortier, 2nd, 89½.
Hen.—V. Fortier, 1st, 95; W. H. Reid, 2nd, 93½; W. M. Osborne, 3rd, 90½.
Cockerel.—W. H. Reid, 1st, 92½.
Pullet.—W. H. Reid, 1st, 94.

BANTAMS—R. C. BLACK.

Cock.—E. F. Murphy, 1st 96, 2nd 92½; Oldrieve & Wilkinson, 3rd, 91.
Hen.—E. F. Murphy, 1st, 94½; Oldrieve & Wilkinson, 2nd, 94; W. H. Reid, 3rd, 93½.
Cockerel.—Oldrieve & Wilkinson, 1st, 94.
Pullet.—Oldrieve & Wilkinson, 1st, 94½; E. F. Murphy, 2nd, 94½.

BANTAMS—BUFF COCHIN.

Cock.—U. Bonneville, 1st, 92; P. H. Selwyn, 2nd, 91½; V. Fortier, 3rd, 90.
Hen.—W. H. Reid, 1st, 95; V. Fortier, 2nd, 91½; U. Bonneville, 3rd, 91½.
Cockerel.—J, Jacques, 1st, 92½; Cossitt & Co., 2nd, 90½.
Pullet.—U. Bonneville, 1st, 95; V. Fortier, 2nd, 93½; J. Jacques, 3rd, 93.

BANTAMS—JAPANESE.

Cock.—V. Fortier, 1st, 90½.
Hen.—V. Fortier, 1st, 92½.
Cockerel.—V. Fortier, 1st, 94½.
Pullet.—V. Fortier, 1st, 94.

BANTAMS—A. O. V.

Cock.—V. Fortier, 1st, 93.
Hen.—V. Fortier, 1st, 95.
Pullet.—V. Fortier, 1st, 92.

TURKEYS—BRONZE.

Cock.—A. Thompson, 1st; D. Cumming, 2nd; A. Thompson, 3rd.
Hen.—A. Thompson, 1st and 2nd; D. Cumming, 3rd.
Cockerel.—D. Cumming, 1st; A. Thompson, 2nd.
Pullet.—D. Cumming, 1st and 2nd; A. Thompson, 3rd.

TURKEYS—A. O. V.

Cock.—D. Cumming, 1st; W. H. Reid, 2nd.
Hen.—A. Thompson, 1st; D. Cumming, 2nd; W. H. Reid, 3rd.
Cockerel.—A. Thompson, 1st; D. Cumming, 2nd; W. H. Reid, 3rd.
Pullet.—D. Cumming, 1st; A. Thompson, 2nd; F. H. Gisborne, 3rd.

TOULOUSE GEESE.

Old.—A. Thompson, 1st.
Young.—A. Thompson, 1st; D. Cumming, 2nd.

EMBDEN GEESE.

Old.—A. Thompson, 1st.
Young.—A. Thompson, 1st.

A. O. V. GEESE.

Old.—W. H. Reid, 1st; A. Thompson, 2nd and 3rd.
Young.—A. Thompson, 1st and 2nd.

ROUEN DUCKS.

Old.—D. Cumming, 1st.
Young.—D. Cumming, 1st.

PEKIN DUCKS

Old.—A. Thompson, 1st.
Young.—Cossit & Co., 1st; A. Thompson, 2nd.

AYLESBURY DUCKS.

Old.—A. Thompson, 1st.
Young.—A. Thompson, 1st.

O. V. DUCKS.

Old.—A. Thompson, 1st and 2nd; W. H. Reid, 3rd.
Young.—A. Thompson, 1st and 3rd; W. H. Reid, 2nd.

DRESSED POULTRY.

G. Higman, 1st.

EGGS—WHITE.

A. A. Blyth, 1st; J. I. Gill, 2nd; D. Cumming, 3rd.

EGGS—COLORED.

D. Cumming, 1st; C. J. Devlin, 2nd; D. Cumming, 3rd.

PIGEONS.

Pouters, pied.—W. H. Reid, 1st; R. Burroughes, 2nd.
Pouters, any other color.—R. Burroughes, 1st and 2nd.
Carrier.—W. H. Reid, 1st.
Dragoon.—W. H. Reid, 1st.
Barb.—W. H. Reid, 1st.
Tumbler, short faced.—W. H. Reid, 2nd.
Tumbler, long faced.—R. Burroughes, 1st and 2nd.
Fantail.—W. H. Reid, 1st and 2nd.
Jacobin, red or yellow.—R. Burroughes, 1st and 2nd.
Jacobin, any other color.—R. Burroughes, 1st; W. H. Reid, 2nd.
Antwerp, short faced.—W. H. Reid, 1st.
Trumpeter.—W. H. Reid, 1st; R. Burroughes, 2nd.
Turbit.—R. Burroughes, 1st; W. H. Reid, 2nd.
Archangel.—W. H. Reid, 1st and 2nd.
Magpie.—R. Burroughes, 1st and 2nd.
Swallow.—R. Burroughes, 1st.
Nun.—W. H. Reid, 1st; R. Burroughes, 2nd.
Owl, African.—W. H. Reid, 1st and 2nd.
Owl, English.—W. H. Reid, 1st; R. Burroughes, 2nd.
Homer, blue.—W. H. Reid, 1st.
Homer, any other color.—W. H. Reid, 1st.

GUINEA FOWL.

Fred. James, 1st.

RABBITS—ANY OTHER VARIETY.

Fred. James, 1st.

GUINEA PIGS.

Fred. James, 1st and 2nd.

APPENDIX.

PARASITES OF POULTRY.

By Fred. V. Theobald, M.A., F.E.S., from the Journal of the Board of Agriculture.

(*Insects and Mites.*)

The parasitic infestation of poultry causes far more loss than most breeders imagine. Birds are rarely examined, and the cause of their poor condition is not ascertained or even considered. The evil is allowed to spread unmolested, in many instances it spreads with great rapidity, and a general weak and unhealthy condition results.

These parasites are most injurious to young chicks and "brood" hens. The persistent loss of chicks, and the failure of hens to bring off their young, are often due to the irritation caused by the presence of parasites upon their bodies—enemies that are frequently unsuspected. These pests weaken the constitution, and predispose to other maladies, such as diphtheritic roup and "gapes"; in many cases they have been the forerunner of these worse epizootic diseases. Parasites on the young birds stunt their growth. What is termed "Scaly leg" is due to a parasite—a mite. Another species of mite at the root of the quills causes birds to pluck their feathers.

Three Forms of Pests.—There are three distinct groups of pests upon the fowls, namely: (1) Fleas (*Pulicidæ*); (2) Lice (*Mallophaga*); and (3) Mites (*Acarina*). The two former only are true insects, having the six insect legs; the *Acarina* have four pairs of legs, and are quite distinct from true insects. The fleas and some of the worst mites are armed with a piercing and sucking mouth; the bird lice have biting mouths, and thus differ from ticks found on animals. The pests with piercing mouths weaken the birds, not only by causing irritation, but by actual robbing of blood. The biting lice, on the other hand, only cause severe irritation and pruritis, which keep the birds in constant unrest. Most birds have distinct parasites upon them, each species of louse only flourishing on a particular species of bird; duck lice, for instance, cannot live permanently on fowls, and *vice versa*.

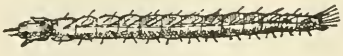
Different species also seem partial to particular parts of the bird's body. The favorite positions seem to be the head, neck, rump, and under the wings. Some of these parasites live permanently on their hosts (lice and some mites), while others (fleas and some mites) go to and fro. Some *Acari* live entirely upon, and even under, the skin, deep amongst the feathers and at their roots; others live, like "ticks," with their heads against the skin and their bodies erect; whilst a single genus (*Lipeurus*) (Fig. 4) lives between the barbs of the feathers. All these parasites are encouraged by dirt.

(1) Fleas (*Pulicidæ*).—The fleas, which are true insects, belong to the order of flies (*Diptera*). They live upon the blood of animals. One species only lives upon the fowl, namely, the bird flea (*Pulex gallinæ* or *avium*), which attacks also most other birds

The hen flea, as it is generally called, is abundant in dirty fowl runs, and especially in the nests where straw is used. The adult flea is dark in color, and, as in all fleas, is devoid of wings. The fleas are provided with very sharp, piercing mouths, their food consisting almost entirely of blood. They are not often seen on the fowls, hence little notice is taken of them. They are what are termed "partial parasites"—parasites that only go to their hosts to feed. The fleas are not noticed on the birds because they generally attack them at night; then, however, they do much harm, causing constant irritation and loss of blood, and depriving them of rest.

Life-history of Hen Flea.—The female flea lays her eggs (nits) chiefly in the nests amongst dust and dirt and in the crevices of the walls and floor. These nits give rise to pearly white maggots, with brown horny heads, which can often be found in the bottom of the nests amongst the dust (Fig. 1). These larvæ are mature in two or three

Fig. 1.



Larva of hen flea (greatly enlarged).

Fig. 2.

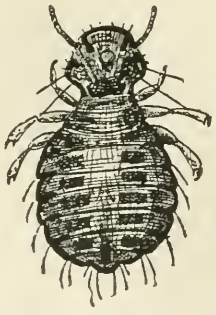
Pupa of hen flea (greatly enlarged.

weeks, when they reach about one-sixth of an inch in length. In warm weather they may be full fed in even ten days. They then spin a pale coccon amongst the dirt, in which they pupate. The pupa (Fig. 2) is at first pale brown, then dark chestnut brown. In this condition the flea remains ten to twenty-one days, when the pupa hatches into the adult. They breed all the year round, but chiefly in warm weather. It is well to remember that, whenever there are dark and dirty hen roosts there are sure to be numbers of *Pulex Gallinæ*.

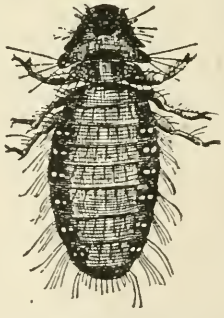
(2) Lice (*Mallophaga*) (Figs. 3 and 4).—The bird lice belong to the group *Mallophaga*, quite distinct from human lice (*Pediculidæ*) and from mammalian lice (*Hæmatopinus*, etc.), the so-called "ticks." These *Mallophaga* have not a piercing mouth; their

Fig 3.

Two Genera of Fowl Lice.



Fowl louse (*Goniocotes hologaster*) (greatly enlarged).



Fowl louse (*Menopon pallidium*) (greatly enlarged).

mouth is simply used for biting. They subsist upon the productions of the skin and fragments of feathers. They cause violent itching, and bite sharply, and must produce considerable pain when present in large numbers, as is too often the case. The feathers, especially the saddle-hackle, generally show notched edges with lice infestation. Eight distinct species of lice attack fowls. These are described in the Journal of the S. E.

Agricultural College (No. 3). The presence of these lice (*Phthiriases*) is generally ascribed to too uniform or insufficient nutrition, or else to damp, dark and dirty runs, especially those badly ventilated. Food, either when uniform or insufficient, has no effect upon their presence. Dark, damp places, however, when dirty, are sure to harbor all these pests, especially when badly ventilated. It is also said that breed affects their presence, but observation tends to show that all breeds are more or less subjected to infestation. In every case they set up severe irritation and inflammation of the skin and pruritis, which often lead to stunted growth, cachectic conditions, and even death.

Life-history of Lice.—All the lice breed fairly rapidly. The eggs or nits are laid upon the down feathers, as a rule; they are often beautifully sculptured objects, oval in form. In about six to ten days they hatch into small, pale, active lice, which at once commence to irritate the birds. They are occasionally found in the nests. Some species are found copulating in the nests, others always on the birds. They live a considerable time. *Menopon pallidium* (Fig. 3) has been kept alive for nine months upon

Fig. 4.

Fowl louse (*Lipeurus variabilis*) (greatly enlarged).

Fig. 5.

Dermanyssus gallinæ and ovum (greatly enlarged).

fresh feathers, the quill epidermis being especially eaten. Before reaching the full-grown state, as many as ten to twelve moults apparently take place, there being little difference in each stage, except the gradual darkening of the markings.

(3) Mites (*Acari*, *Acariases*, *Dermanysses*).—Mites are very minute creatures, and are not true insects, having four pairs of legs. Some are partial parasites, living on the birds at night, as *Dermanyssus gallinæ* (Fig. 5), the commonest fowl mite; others are permanent parasites, as *Sarcoptes*, living at the base of the feathers, and popularly called "Depluming scabies" (Fig. 6). Others, again, live under the skin, forming scabby growths, such as are seen on fowls' legs (*Sarcoptes mutans*). These are armed with a pricking mouth, with which they torment the birds, especially at night, causing loss of condition, hindering setting, and creating loss in other ways.

The most injurious form is the red, or common fowl mite.

The Fowl Mite (*Dermanyssus avium* or *gallinæ*).—This very minute creature is yellowish white to dark red in color, according to the amount of blood it contains, drawn from the birds. They are found in abundance in pigeon-houses, poultry runs, and roosts Both sexes are armed with a sharp rostrum; the female is most bloodthirsty. They feed upon the birds only at night, and hide away in cracks and crevices in the nests, perches, floors, walls and ceilings during the day. Numerous colonies can be found in the nests free and coupled together, with countless eggs and quantities of exuviæ and young forms, especially in straw nests. They are most prolific, and can remain for months without any food; hence the removal of the birds from the runs is useless as a remedy. The ova hatch rapidly. The young are at first silvery white, with six legs like a true insect. They moult their skin a number of times, the exuviæ or cast skins forming a whitish or silvery powder often seen on the perches. As the mites grow older they become darker in color. Light and air are distasteful to them; damp, dark and badly-ventilated roosts are where they flourish best. Breeding is especially rapid in spring and summer. This mite is often unobserved, owing to its strict nocturnal habits, and

hence the cause of the fowls keeping backward, and even dying, is not understood. Birds should, when looking dejected and emaciated, be examined at night, and if mites are found, treatment should be at once resorted to. Transmission to man and other animals is not unusual, but, although the mites for a time cause severe irritation, they will not remain for any length of time, and readily yield to treatment. Hens should not roost in stables and sheds where other animals are kept, as it is said that fowl lice as well as mites may attack various animals.

Prevention and Treatment of Fleas, Lice and Mites.—Infestation is always worst in dirty and neglected runs and roosts, and such are a standing danger to more cleanly neighbors. Cleanliness and freedom will always put these pests under a disadvantage—not only cleanliness of the nests, walls and floor, but also of the ceilings and perches. To suppress these pests, the houses should be cleaned down at least twice a year with a wash made of hot lime, sulphur and soft soap, the ceilings, walls and nests having a good coating. The wash should be fairly liquid, so as to run into every crack and crevice. Early spring and autumn are the times for these applications. The perches are best treated with boiling water and soft soap, or with an emulsion of kerosene or creosote. This latter insecticide is most beneficial, especially in regard to mites.

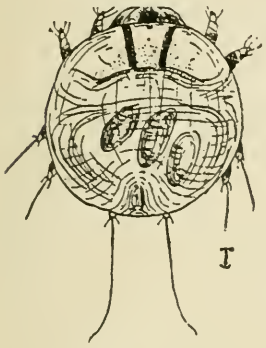
Special attention should be paid to the nests; they should be frequently cleansed and changed to keep off fleas and other parasites. Neither nest boxes nor perches should be fixed, relays of each should be at hand, so that they can be changed to ensure complete disinfection. The nest boxes should be now and then cleaned out and dressed with hot lime and sulphur, or with a solution of corrosive sublimate. Either dusting the prepared nests with Persian insect powder, or putting a little sawdust or sand soaked in naphthaline at the bottom, will keep off these depredators. Wood-shavings or wood-wool, in the nests instead of straw, is most beneficial. No lice or fleas will live in it, owing to the aromatic odor given off from the wood. Care, of course, must be taken that the remedies employed do not affect the eggs in the nest

Schneider's suggestion of fumigating the roosts with sulphuret of carbon, put in small phials in the corners of the houses, etc., where they cannot be upset, is very successful so far as killing the pests goes, but this method is not quite safe to recommend. Regarding the infestation of the birds themselves, white precipitate seldom fails. The heads and necks of young chicks should be early dressed very sparingly, and repeated when necessary. White precipitate is a strong irritant poison, and needs the greatest care in its use, especially in young chicks. It is best obtained as an ointment from the chemists. Hens selected for sitting should have a small quantity of this ointment rubbed in under the vent, head and sides, and then well dusted with insect powder. Sitting hens are greatly tortured by parasites, and their young are often lost by neglect of these simple precautions. The skin should be first moistened with soft soap and water prior to dusting the birds with the insect powder (*pyrethrum*). Some breeders prefer flower of sulphur. Dust-baths are the natural remedy for lice and mites, and fowls should never be kept without them. Sand mixed with a small quantity of creosote will generally keep the birds free from vermin. Finely divided gypsum, mixed with a small quantity of paraffin or carbolic, is still more successful for these dust-baths, quickly getting rid of any lingering pests that the birds cannot reach.

The supposed connection between "Gapes" and "Lice."—It has been stated that there is a connection between the nematode worm, *Syngamus bifurcatus* (the "red-worm" of gamekeepers), that produces "gapes" in fowls and pheasants, and lice. The one is thought to give rise to the other in some mysterious way; needless to say there is no connection whatever. The life-history of that destructive scourge, the gape-worm, has been clearly traced, and we now know that no intermediate host is required for its development.

Feather Eating or Depluming Scabies.—Feather-eating in poultry is due to a minute parasitic mite (*Sarcoptes laevis*) at the roots of the feathers. It is generally supposed to be due to a "vicious habit;" numerous absurd theories, such as idleness and thirst, having been put forward to account for it. There are two kinds of feather-eating, viz., "self-feather-eating" and the eating of other birds' feathers. The former is entirely due to the mites living upon and irritating the roots of the quills, and so far as is known, the latter is caused by the same *acarus*. The form on the fowl makes its appearance about April, and is most prevalent in spring and summer. The mites can be easily found amongst the white powdery matter at the base of quill. The minute young are transmitted during copulation. The fowls pluck out the feathers to destroy the irritation caused by the mites at their base.

Fig. 6.



(*Sarcoptes laevis*). Egg-bearing female (greatly enlarged).

Prevention and Remedies.—As the disease is contagious, isolation of the affected bird is the first step, especially if it be a cock. The mites readily yield to treatment with oil of cloves rubbed into the infected area. One part of creosote to thirty of lard or vaseline is still more successful.

Scaly Leg or Leg Rot.—This well-known disease is again due to a mite (*Sarcoptes mutans*). This complaint is a serious matter and very prevalent. The scales of the leg and feet become raised and separated, and a chalk-like excretion accumulates between and over them. Rough lumpy crusts are formed, and under these and the scales the mites live and breed. The disease is contagious.

Prevention and Remedies.—Isolation of diseased birds is most essential. Removal of the crusts without causing bleeding, and then the application of creosote (one part) lard (twenty parts), will be found sufficient. Oil of turpentine has still more definite results. A mixture of equal parts of flower of sulphur and vaseline rubbed into the limb also cures this complaint. In every case the limb some days after treatment should be well cleaned with hot water and soft soap. If exhibits of poultry infested with parasites were prohibited by poultry show committees, it would force attention to the subject in a way that could not fail to greatly reduce parasitic infestation.

EXPERIMENTS IN HATCHING EGGS.

The French Ministry of Agriculture has given publicity to an interesting article by Madame Dieudonné relating to the effects of cold upon the incubation of eggs.

A large number of fowls, some of which were kept in confinement and others allowed to run free, were kept under observation day and night for a considerable period, and it was noticed that the fowls, which were all good sitting hens, hatched large and strong broods during the months of February, March, and April; but that during the warm months of June, July, and August, the hatchings were not so successful, although no change had been made either in the treatment and housing of the hens or in their food. It was also found that the eggs laid by hens in confinement, and collected every day and carefully stored, gave less satisfactory results than the eggs of the fowls which were at liberty. Madame Dieudonné inferred that these differences might be attributed to some extent to the period of comparative cold which eggs generally undergo prior to setting, and, as the result of further investigations and experiments, she is of opinion that two conditions are necessary for the successful artificial incubation of eggs, viz.: they must first be cooled and then gradually warmed.

This is indeed only an adaption of what takes place in nature, for fowls on the farm hatch their eggs, and with remarkable success, in hedges and out-of-the-way places where the eggs, both before and during the period of incubation, are exposed to considerable fluctuations of temperature, which not infrequently falls below freezing point, and it is well known that partridges almost invariably rear large broods in the early spring, unless the eggs have been subjected to unduly bad weather. Cases are also known of interrupted but successful hatchings when the hen had left the nest for several consecutive days.

Moreover, Mme. Dieudonné has confirmed her opinion by experimental proof, and has always obtained excellent results with eggs which have been placed in the open air during several nights preceding the period of incubation, and artificially cooled in the course of incubation, while when, on the contrary, this process of cooling the eggs was neglected, good results were never obtained. Her experiments showed that the eggs, after having been completely cooled, slowly regained their normal temperature, occupying seven or eight hours in the process; the chicks were strong and of rapid growth, but if the eggs regained their normal temperature too quickly the chicks either died in the shell, or they were born weak and anæmic and died within a few days. It may be mentioned in this connection that when a hen, of necessity, leaves her nest each day, the eggs are naturally subjected to a temporary refrigeration.

In an experiment with the incubator, the eggs were cooled by exposing them to the air daily for an hour and a half during the whole course of incubation. This exposure retarded the period of incubation for three days. The eggs which were thus exposed became quite cold, and it required about 12 hours to bring them back to 40 ° C. (104 ° F.), the temperature necessary for incubation. In this experiment 13 out of 16 eggs were hatched and produced vigorous chicks. The incubator had previously been employed for over a year without success.

A second experiment, begun at 6 p.m. on the 17th of June, is referred to by Madame Dieudonné as demonstrating that the gradual heating of the eggs is no less essential than the process of cooling, 25 eggs which had been laid on the two preceding and very warm days, were placed in the incubator and then exposed to the air, as in the preceding case, but the weather was much warmer, the thermometer registering 20 ° to 25 ° C. (68 ° to 77 ° F.). When replaced in the incubator the eggs regained the necessary temperature of 40 ° C. (104 ° F.) in about two or three hours. This temperature was maintained until the 10th of July, when the brood was hatched; but although the chicks pierced the shell, they were so weak that they died before leaving the egg.

It is interesting to note that the eggs on which a fowl is sitting are not all at the same temperature, those which lie on the outside being less warmed than the others. In this connection, Mme. Dieudonné has observed a difference which sometimes exceeds 6 ° C. (10·8 ° F.), and it is doubtless owing to this cause that the hen instinctively changes the position of her eggs, moving them from without inwards, and *vice versa*.

With respect to these observations of Mme. Dieudonné, M. Fouquet states, in a recent number of the *Journal des Economistes*, that something analogous was published by M. Duclaux, more than 25 years ago, regarding the egg of the silkworm, whose life history may be divided into two periods which are separated from each other by an interval of cold. M. Duclaux indeed showed that the action of cold was not only necessary for the successful incubation of the egg, but that it could be artificially employed so as to rear silkworms at a season in which it would otherwise be impracticable to do so. The action of cold having been shown to be necessary to induce the development of the embryo within the egg, M. Duclaux further proved that the eggs which are cooled artificially gave more healthy products than those which are treated naturally, and in this respect the action of cold would appear to have a beneficial effect upon the incubation of the eggs.

MARKETING POULTRY.

Mr. Robert Awde, Food Inspector for the City of Toronto, in a letter to the Ontario Department of Agriculture, makes the following statement which is of interest to poultrymen in connection with the preparation of poultry for market:

"Farmers and country store-keepers, as well as city consumers, suffer loss—and in the latter case even health itself—by the carelessness of farmers sending poultry (especial-turkeys) to market having their crops or craws full of food. In a few hours fermentation and decomposition begin, poisonous cases are generated, and are driven back into the body; discoloration and putrefaction rapidly follow. If the fowl is still in the hands of the commission merchant there is a serious depreciation in value, and in many cases a total loss, which falls back upon the farmer or country store-keeper. All these evils could be avoided by giving the fowls nothing but water for twenty-four hours before killing them. If this were always done, better prices would be obtained, the farmer and dealer would be insured against loss, and the consumer would injoy his meal without fear of consequences for which the "stuffing" or "dressing" now very often gets the blame. I have tested the matter fully. On January 11th I bought three properly-killed turkeys, and hung them up in Mr. Gunn's warehouse on Front street. We ate the last one on March 5th. It looked as well as ever, was free from taint and was very tender. I bought it at six cents a pound. On the day we ate it turkeys were twelve cents per pound."

ANNUAL REPORTS

OF THE

DAIRYMEN AND CREAMERIES'

ASSOCIATIONS

OF THE

PROVINCE OF ONTARIO

1895.

DAIRYMEN'S ASSOCIATION OF EASTERN ONTARIO.
DAIRYMEN'S ASSOCIATION OF WESTERN ONTARIO.
CREAMERIES' ASSOCIATION OF ONTARIO.

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CONTENTS.

PAGE.

DAIRYMEN'S ASSOCIATION OF EASTERN ONTARIO—

Officers for 1896 2
Nineteenth Annual Meeting 3
The President's Address: Edward Kidd 3
Committees 4
Dairying the Leading Farm Industry: D. Derbyshire 4
Report of Instructor Purvis 6
Practical Experience with the Babcock Test: W. Eager 8
Agricultural Grasses: James Fletcher 13
Associational Amenities 17
Address of Welcome 18
Dairy Education: D. Derbyshire 19
The Cultivation and Care of House Plants: James Fletcher 20
Report of Instructor Bensley 21
Report of Instructor Grant 22
The Horn Fly: James Fletcher 27
Cheapening the Cost of the Production of Milk: John Gould 30
Address by Hon. John Dryden 33
Hog Raising: Prof. J. W. Robertson 36
Bread and Milk and Bread and Butter: Prof. J. W. Robertson 41
Chart showing Relative Nutritive Ingredients of Foods 47
A United People: Hon. John Dryden 49
Potato Rot: James Fletcher 50
Pointers to Cheese-makers: Prof. H. H. Dean 51
The Stable Life of a Dairy Cow: John Gould 54
The Kingston Dairy School: J. A. Ruddick 59
Report of Instructor Publow 63
Adding Two per cent. to Fat Readings in Cheese Factories 66
Some Lessons from a Trip to Europe: Prof. H. H. Dean 70

DAIRYMEN'S ASSOCIATION OF WESTERN ONTARIO—

Officers for 1896 74
Letter of Transmittal 75
Nineteenth Annual Convention 77
Directors' Report 77
Secretary's Report: J. W. Wheaton 79
President's Address: Andrew Pattullo 84
Cheese Markets and the Best Method of Operating Them: J. S. Pearce 89
How to Improve the Cheese Markets of Western Ontario: George Hately 99
Report of Dairy Exhibits and Dairy Test: J. W. Wheaton 101
Unity and Determination of Purpose: Hon. John Dryden 106
Report of Inspector Millar 112
Keep Whey Out of the Milk Cans: Thomas Ballantyne 116
Committees 118
The Dairy Cow and Where to Find Her: John Gould 118
From the Farrowing Pen to the Block: Theodore Louis 123
Care of Milk for Cheese-making and Care of Samples for Babcock Test: James A. Gray 127

PAGE.

Gassy Milk and Floating Curds: HENRY WHITE 128
Practical Cheese-making: A. T. BELL 133
The Handling of Over-ripe Milk: ROBERT JOHNSTON 138
More About the Hog: THEODORE LOUIS 140
Care for the Cow and Feeding Her for Profit: JOHN GOULD 146
Some Practical Experience: E. D. TILLSON 151
Fine Food Products in Ontario: Prof. J. W. ROBERTSON 152
Mistakes in Cheese-making and How to Avoid Them: T. B. MILLAR 155
Dairying in Manitoba: J. A. RUDDICK 160
Adding Two per cent. to the Fat Test: Prof. H. H. DEAN 161
Hog Breeding: THEODORE LOUIS 167
Portable Hurdle Fence 171
Resolutions 172
Vote of Thanks, 172—Whey in Milk Cans, 172—Instruction and Inspection, 173—Selling Cheese on the Call Board, 173—Branding Cheese, 175.
In Memoriam 176
Report of Committee on Dairy Utensils 176
Report of Nominating Committee 177
Winter Butter-Making: J. A. RUDDICK 177
Dairy Farming Up to Date: JAMES MILLS 179

CREAMERIES' ASSOCIATION OF ONTARIO—

OFFICERS FOR 1886 182
ELEVENTH ANNUAL MEETING 183
President's Address: D. DERBYSHIRE 183
Committees 185
How to Improve the Dairy Industry: A. A. WRIGHT 187
Pure Water on the Farm: F. T. SHUTT 192
How to Keep Up the Fertility of Our Farm: Prof. WM. BROOKS 198
The Annual Banquet 215
Proper Cow Stables: A. A. WRIGHT 215
Cheaper Production by Co-operative Methods: D. M. MACPHERSON 218
Butter for the British Market: Prof. J. W. ROBERTSON 225
Presentation to Mr. Mark Sprague 231
Injurious Insects: JAMES FLETCHER 232
The Original Forms of Dairy Produce: F. T. SHUTT 236
Election of Officers 242
Education of the Farmer: Prof. WM. BROOKS 243
The Old and the New Agriculture: C. C. JAMES 254
Report of Instructor Sprague 257
Butter-making Experiments: Prof. H. H. DEAN 259

APPENDIX—

LIST OF MEMBERS FOR 1896 265
FINANCIAL STATEMENTS FOR 1895 271

DAIRYMEN'S ASSOCIATION OF EASTERN ONTARIO.

OFFICERS FOR 1896.

President, - - - - - - HENRY WADE, Toronto.

1st Vice-President, - - - JOHN MCTAVISH, Vancamp.

2nd Vice-President, - - - E. J. MADDEN, Newburg.

Directors :

Division No. 1 ..... EDWARD KIDD, North Gower.
Division No. 2 ..... WILLIAM EAGER, Morrisburg.
Division No. 3 ..... JOHN R. DARGAVEL, Elgin.
Division No. 4 ..... JAMES WHITTON, Wellman's Corners.
Division No. 5 ..... T. B. CARLAW, Warkworth.
Division No. 6 ..... HENRY WADE, Toronto.

Secretary, - - - - - - R. G. MURPHY, Elgin.

Treasurer, - - - - - - P. R. DALY, Foxboro'.

Auditors, - - - - - - - MORDEN BIRD, Stirling.
F. BRENTON, Belleville.

Instructors, - - - - - - G. G. PUBLOW, Perth.

" - - - - - J. D. MCCANN, Perth.

" - - - - - - A. P. PURVIS, Maxville.

" - - - - - GEORGE BENSLEY, Warkworth.

" - - - - - - W. W. GRANT, Wellman's Corners.

NINETEENTH ANNUAL MEETING

OF THE

DAIRYMEN'S ASSOCIATION OF EASTERN ONTARIO.

The Nineteenth Annual Convention of the Dairymen's Association of Eastern Ontario was held in the village of Campbellford, on Wednesday, Thursday and Friday, January 8th, 9th and 10th, 1896. The meetings were held in the Music Hall, and every session was well attended. Taken altogether it was the most largely attended convention yet held under the auspices of the Association. The number of questions asked the various speakers showed the keen interest manifested in the proceedings. The business people of Campbellford were generous in their hospitality, and every endeavor was made by leading citizens to make the gathering a success.

THE PRESIDENT'S ADDRESS.

Mr. E. KIDD, of North Gower, President of the Association, took the chair at 11 o'clock on Wednesday morning, and after calling the meeting to order, delivered the following address :

It gives me great satisfaction to meet you again. I am delighted that the enterprising town of Campbellford was selected for this annual meeting, and I take this opportunity of thanking the citizens of this town for their warm reception, and the kindly way you met our Secretary and committee in assisting to thoroughly announce this meeting, by giving advertising, thus enabling us to issue the nice pamphlet programme which has been sent throughout Eastern Ontario. We feel sure we are going to have a splendid meeting, and I desire all to take part.

I regret very much that we have had lower prices the past season than usual, but we must not be discouraged. Even with lower prices and dry weather, nothing on the farm has paid as well as cheese ; and I confidently look forward to better markets next season. We can certainly keep better cows, and carefully prepare for the dry weather that is sure to come each year. It seems to me that corn is the sheet anchor for our dairymen, and it certainly is the best and cheapest food that can be grown. I would urge you all to grow plenty of corn. Another thing that is necessary is to have a silo, and to have the corn saved in the best possible shape, so that none will be wasted, and at the same time have it in the nicest condition for the stock. The aim of this Association has always been to make the finest quality of goods, and I feel well satisfied with the results ; but as competition is getting keener each year, we must put forth every effort to take another step in advance the coming season. England imports $26,000,000 worth of cheese, and Canada has been able to secure $16,000,000 worth of this great market. But to hold this large trade we want to be energetic and active, giving dealers exactly the quality of cheese they require, and have it go forward regularly, so they can depend on having a constant supply

of our fancy Canadian cheese for their customers. I feel sure I but echo the sentiments of this Association when I thank the Hon. John Dryden, Minister of Agriculture, for the interest he has taken and valuable assistance rendered to us in every possible way; also Professor Robertson, and others, who have rendered valuable assistance in educating our farmers and dairymen to go more thoroughly into dairying. I am sure we feel more than satisfied with the good work performed by our able staff of instructors. Never in the history of this Association has as much good work been done. I feel particularly well pleased with the grand educational work that is being carried on in our well-equipped dairy schools, and I am delighted that the Ontario Minister of Agriculture has directed that another dairy school should be established at Strathroy and will be ready for cheese and butter makers to get a good, sound education in a short time. We must all work unitedly and for one great object, that of building up and extending this great national industry. I take this opportunity of thanking the officers and members of this Association for their generous and hearty support. (Applause).

COMMITTEES.

The following committees were then appointed :

BUSINESS.—Charles Smith, R. G. Murphy, J. R. Dargavel.

NOMINATIONS.—Henry Wade, James Whitton, John McTavish.

FINANCE.—R. G. Murphy, Henry Wade, R. A. Craig.

LEGISLATION.—Wm. Eager, E. J. Madden, T. B. Carlaw.

DAIRYING THE LEADING FARM INDUSTRY.

Mr. D. DERBYSHIRE, of Brockville, was introduced, and said : I congratulate you, Mr. President, on the excellent address just delivered by you, and on your work throughout the year. We expected you would make a careful, painstaking officer, and our expectations have been fully realised. I congratulate this Association on the good work that has been done this last year. Your Secretary has been energetic, and has done splendid service. He certainly is the right man for the place. Under the direction of this Association you have carried on the work of education in each factory in Eastern Ontario by your able staff of instructors, and I know that finer goods have been turned out than ever before.

We have received lower prices and had dry weather to contend with, but, as you have said, nothing has paid better, and when we consider that in 29 years only one year before went below a paying basis, we certainly should not complain. Even this year can be made profitable, if we will only examine ourselves and our surroundings. Has each individual farmer done his best? Have you kept only profitable cows, and let the ordinary ones go, and raised a few heifers from your best cows to take the place of those discarded? Have you a warm, well ventilated stable, where the sun can shine in, where the cows can be kept comfortable? Have you grown plenty of corn, and built a silo, so that to-day you have plenty of good nutritious food? If not you have not done your duty. No amount of grumbling on your part about low prices, about the mistakes or mismanagement on the part of our governments, will excuse you for neglecting your own business, and not giving the end of the work you can control every possible attention. The thoughtful man will learn by this last year's experience that we must reduce the cost of production as a means of our ultimate victory. We must have a longer season, by co-operative methods, making cheese for six months and butter the other four. This can only be done by the farmers using their influence and sending their milk to large factories, where the buildings will be constructed so that they will do your section credit, and which

will be equipped with the right machinery, and with a competent well-trained man in charge. With these factories centres of education, you will be surprised at the advancement which will be made. We must not only reduce the cost of production, but we must have a finer quality of goods. This can only be accomplished by each individual farmer doing his best to send to his factory a larger quantity and a better quality of milk that has been strained and well aerated, and carefully got to the factory in the best possible condition. We can only hold the first position in this fair land, already famous for making fancy cheese, by all working together and making Eastern Ontario goods, what we all desire them to be, the finest in the world. Do not be led astray by some one who has been a failure in everything he undertook, but stick to dairying with improved methods, because it is the leading industry in our country to-day, and must continue to be so in the future. I am particularly anxious to impress on your minds the great necessity of improved methods, better cows, better stables, larger quantities of nutritious foods, not only reducing the cost of production but making a finer and more uniform quality of goods, thus securing for us a permanent demand at higher prices. I agree with you, Mr. President, that this Association has been a power for good through holding conventions and disseminating useful information, making grants of money prizes, to aid in holding attractive and stimulating exhibitions of cheese, and in every way fostering the dairy industry in this whole eastern section, and I feel sure that if we would all go home from this convention and commence a thorough examination of our stock and premises, and everything pertaining to our business it would fully repay us. Send one of your young men to one of our well equipped dairy schools, urge your cheese-maker to go also, and get inspired with new ideas and a more practical and thorough understanding of our business, and then we will all have the great satisfaction of seeing 1896 the most prosperous of any in the history of this important organization.

I am directed by the Mayor of our Island City to invite you to hold your next annual convention at Brockville, and I feel sure that a warm reception will be given this Association, and a large, enthusiastic and enquiring audience will be in attendance to listen to the eminent instructors in dairying that your Association has always secured.

In closing, I would say that while we may not expect to get the fabulous prices for our cheese we once received, I think we can get better prices than we do. At the present price every box will be picked up by the first of June, and that will mean better prices next year. The main cause of the depression this year was because we got higher prices in the previous autumn. We made some winter cheese that year, and being of a poor quality it brought down the price It has been truly said that if the cheese made in January, February and March were thrown into the St. Lawrence we would have been better off in pocket. Corn is a sure crop, and this season wherever that crop was grown it was vigorous, and, notwithstanding the drouth, it was a better crop than ever before. Some men are buying straw for feed to-day, and are losing money with their cows, simply because they did not grow corn. Mr. Bissell, a dairyman in our section, has a silo that he does not open in the winter, but uses it in the summer, when the dry weather comes and the flies are abundant. He puts the dairy cows in the cool stable, with screens in the windows to keep the flies out, and feeds them with ensilage and other succulent food, and has an abundance of milk from his happy and comfortable animals. (Applause.) No June grass is better or so cheap. There are some who fear that we may overdo the cheese business. I have one friend who is always talking that way. I said to him, "My dear sir, do not be alarmed. There are not enough persons who will practice what is necessary in order to keep into this narrow road leading to higher things in the dairy line to overcrowd the way. How many will go in for 'final perseverance' in this line of work?" He scratched his head and went out. I fear, however, that he is still pondering on the matter, for he is one of those men who will be buying straw at high prices instead of feeding succulent corn to his cows.

We have been advancing in Eastern Ontario in the cheese and butter industry, but we must continue to improve. Other portions of the Dominion are making progress, and Quebec is coming forward as fast as she can to vie with us for the supremacy. I was at

Cowansville, in the Eastern Townships, some time ago at a dairy gathering, and I told them that as a fellow Canadian I was delighted at their enthusiasm in dairying. "Why," said I, "we never heard of you before as dairymen. At the Centennial, at the Colonial and at the World's Fair it was all Ontario cheese that beat the world. I think we can beat you still, but I am glad you are waking to your opportunities." At the close of my speech one or two excited French-Canadians came forward, and energetically shaking their fists under my nose, exclaimed: "You can't do it any longer." (Laughter and applause) Gentlemen, we must look to our laurels. If we have cows which do not come up to a good standard, weed them out. Breed up to the ideal. What do men do who wish any particular quality in their horses—be it speed or form? They breed toward that particular requirement and select carefully. So must we with our milking cows.

The meeting then adjourned.

FIRST DAY—AFTERNOON SESSION.

There was an unusually large attendance when the President resumed the chair at two o'clock. After a few preliminary remarks he called upon the instructors for their reports.

REPORT OF INSTRUCTOR PURVIS.

I herewith submit my annual report of work done as your instructor during the season of 1895.

I commenced work on May 8th and quit on the 25th of October, working in all 131 days, ninety-nine of which were spent in factories giving instruction and testing milk, thirty in travelling, and two in visiting Brockville Cheese Board on business with the directors of the Association.

I received calls from 124 factories for visits, but owing to the lateness of some of the calls I was able to visit only sixty-nine factories, a number of which I visited three times, making in all ninety-nine visits. I tested 5,290 samples of milk, fifty-seven of which I found had been tampered with. With three exceptions these were dealt with by the managers of the factories, after being notified by me to do so. I laid information with a magistrate against three, who pleaded guilty and were fined. Of the number who were detected supplying deteriorated milk forty-six were at factories not visited by me in former years, only eleven having been found wrong at factories where they secure the services of an inspector every year. This shows the advantage of this part of the work. The cheese-makers I found eager for advice. A great many of them ripen the milk too much, and have to hurry the work afterwards, and do not allow the curd time to get firm before the whey has to be drawn, the result being lack of body in the cheese. I advise ripening so that the whey will come off with a full one-quarter of acid on hot iron at from three to four hours after setting. This gives time to fully cook and firm up the curd in the whey without danger of acid cut, and gives the cheese better keeping qualities. There is a steady improvement in the condition of the factories, but there are chances of a great advance in this line yet, a great many factories being only single boarded and totally unfit to keep cheese in. However, I am looking forward to a decided improvement next year, as last season taught a lesson to some factorymen they will not forget soon.

The following is a list of the factories visited by me during the season for the purpose of instruction and inspection ; also the number of visits made to each :

Factory.	Visits.	Factory.	Visits.	Factory.	Visits.
Fournier	3	Russell, No. 3	1	Spring Creek, No. 1	1
North Williamsburg	1	do No. 14	1	Aberdeen (a)	1
Dunbar	3	Lodi	2	Climax (2)	1
May's Fancy	3	Ashburn	1	Ash Grove	1
Craig & Son, No. 1	3	Rose & Co., No. 1	1	Ste. Anne	3
do No. 2	2	do No. 2	3	Ottawa Valley	1
do No. 3	2	White Globe, No. 3	1	Routhier	1
do No. 4	1	Elm Street	1	Farmer's Joy	1
do No. 5	1	Elma	1	Riceville	1
Dunbar (2)	1	Pendleton, No. 1	2	Embrun	1
Aberdeen (1)	3	do No. 2	1	Metcalfe	1
St. Amour	3	Tourangeau, No. 1	1	Sherriff's	1
Curran	1	do No. 2	2	Mulloy & Co	1
Therrien's	2	Kirk Hill, No. 8	1	Morrisburg	1
Siloam	2	do No. 7	1	Lunenburg	1
Cadieux	1	do No. 4	2	Riverside	1
E. H., No. 1	1	do No. 12	1	Mayerville	1
do No. 2	2	do No. 5	1	White Star	1
do No. 3	2	do No. 2	1	Star, No. 1	1
Spring Creek, No. 3	1	do No. 10	1	Goldfield, No. 2	1
Maple Leaf	3	Demers	1	St. Isidore	1
Russell, No. 6	2	Mongenais	1	Elm Grove	1
do No. 10	1	Lorne	2	Wyman's	1

Making in all ninety-nine visits.

Yours respectfully,

A. P. Purvis.

Mr. Eager : Do you make the test with the Babcock ?

Mr. Purvis : Yes ; I use the Babcock tester and the Quevenne lactometer.

Mr. Eager : Were the people satisfied where the tests were made ?

Mr. Purvis : Yes. My method was that when I went to a factory and completed my test I noted on my list those that were wrong, or that I thought were wrong, and where I considered it advisable I went to the farmer's place and took a sample that I saw was drawn from the cows ; and if I was not satisfied that the milk sent to the factory was all right I conferred with the manager of the factory or the committee, and then made arrangements with the guilty parties as to settling. Sometimes I had to notify them in writing, giving them until a certain day to settle. With three exceptions they settled. Some arranged with me, as they would prefer settling with a stranger.

Mr. Eager : During the season of 1895 did you find the factorymen paying by quality, as a rule, or going about in the old way of pooling the milk ?

Mr. Purvis : A number paid upon the fat basis, and from these factories I had but very few cases of milk that had been tampered with ; and besides they generally had a skilled hand at the testing. However, I found that the patrons like a disinterested person to do the testing.

Mr. Eager : Did you find the patrons inclined to favor payment for milk according to the amount of butter-fat ?

Mr. Purvis : Not to my personal knowledge. A few in the county of Glengarry had been paying on the fat basis, but the testing had been made by the cheese maker, and they this year decided to pool their milk again. They apparently were not satisfied with the cheese-makers' testing.

Mr. Eager : You think they were not satisfied on account of the testing being done by the cheese-maker ?

Mr. Purvis : Yes ; that appeared to be the reason.

Mr. Dargavel : Who else could they have to do the testing ?

Mr. PURVIS: Mr. Eager has a man who does nothing else but test the milk in his various factories.

Mr. DARGAVEL: That would not be practicable unless a man had a number of factories under his control.

Mr. PURVIS: One man in Winchester does the testing for a number of factories. Regarding the ordinary plan of testing, the usual mode is for the cheese-maker to make a composite test. I think the testing in such cases is done twice a month, but I am not sure of that. I have visited only two factories where they are paying by the Babcock test.

Mr. MURPHY: Do you think it is possible for scattered factories to combine and pay one man to do the testing for all of them?

Mr. PURVIS: Yes; I think it is possible, and I further believe that it is the only practicable plan. I know of one factory paying now on the basis of butter-fat, and there the patrons are taking much better care of their milk than formerly. They are careful to air it, and handle it better in general. I would urge upon dairymen the importance of aerating the milk. If the milk is allowed to become quiet and the cream has formed, under certain conditions that cream will be leathery, and you cannot incorporate it in your milk, and therefore may not get a fair sample for testing. Better care of the milk means better milk both in flavor and also in the tester.

Mr. DERBYSHIRE: If the proper aeration of milk, and getting it to the factory in better condition, is possible, and men do so, why don't they make better cheese and more of it from such milk?

Mr. PURVIS: I think they do.

Mr. DERBYSHIRE: Then don't you think that ought to prevent all those expensive law suits and turmoil and ill-feeling among neighbors?

Mr. PURVIS; They are not apt to act in such a dishonest or unneighborly spirit when they try this plan we recommend.

PRACTICAL EXPERIENCE WITH THE BABCOCK TEST.

Mr. Wm. EAGER, of Morrisburg, a former president of the Association, and proprietor of one of the largest combinations of cheese factories in the Province, was introduced, and spoke as follows: I have had a good deal of experience in cheese-making, but I find it is one thing to make cheese in a factory and another to get up on a platform and deliver an address upon that subject. As one of your directors I have had Mr. Purvis under my charge for the past two years. I am the furthest east of the directors, and our section runs down to the Province of Quebec. On my own account I have been trying my best for the last three years to introduce the Babcock test in all my factories. I have not succeeded in all, but I have done so in most cases. It has been difficult for me to accomplish even as much as I have done, because I have been a sort of advance guard, away in front of the regular army, and have had to cut the way for myself and the others who are following. We have had a great many difficulties to contend with, which have tended to keep us back. In 1893 we started with one factory, paying for milk according to butter-fat. I touched it very lightly at the beginning, because you all know how patrons argue at first against the idea of paying for milk upon the new basis. Mr. McEwan was employed by the Association to travel through this eastern section of the province, and give instruction to the factories about butter and cheese-making. He was a good man. I had him for a few days to help me to start the plan of paying for milk according to the percentage of butter fat contained in it. At the first everything went along very smoothly until we went to make up the pay-list and distribute the money. When one man has milk testing 3 per cent., another milk testing 3.4, and another milk showing 3.8, it makes a difference as compared with the old pooling plan. And when

people have been accustomed to receive payment according to the number of pounds of milk sent in, regardless of quality, getting as much per pound as their neighbors who sent richer milk, it is hard to have to cut them down one or two or three or four cents per hundred pounds of milk. After the first month was settled for the thing quietened down, and we tried it for another month. The milk began to get better, and kept improved, and has been more uniform in condition. I had twenty-five factories using the test and paying according to butter-fat in 1894, but later in the season two of these kicked over the traces, and went back to the old plan. In that year three other factories refused to accept the Babcock test, as they did not consider it a fair plan. They held that there was as much cheese made from milk that stood 3 or 3.5 per cent. as there was in richer milk We find it difficult to get people to believe that there is more casein or curd in the richer milk. In 1895 we have had equally good results with the tester. Taking the work on the whole I think we have succeeded very well. In looking around, however, I find there are many factories that seem afraid to have anything to do with the Babcock test as the basis of payment. I have also observed that where the people have been educated up to the point of accepting the Babcock as the basis of payment there is better care taken of the milk. They find that if they do not keep up the quality of the milk they will not get the best figure possible for the same. It means also that in order for a man to get his milk up to this high quality he will look over his cows, and will not keep any animal in his dairy that will not give a good mess of milk with a high percentage of fat. It gets the people out of the old rut, and puts the business on a better basis. According to the old system of paying for milk as it is sent to the factory, the slip-shod fellow who sends milk of a poor quality gets as much per hundred pounds as the man who sends the richest milk, and he says that he does not want to try any other plan. The good patron says: "That other good-for-nothing fellow gets as much for his milk as I do," and he gets discouraged. It is not fair. It is not business-like, and it is not honest. As manufacturers of cheese we have also been doing things in a slip shod way. Now that we have a better thing why should we not adopt it? Is there any doubt as to whether this man is skimming his milk, or that man is saving the strippings, or another man is putting in water? You can soon determine the matter with the little instrument we recommend. Before we put in the Babcock tester some of our patrons used to wonder why it took so much milk to make a pound of cheese. I would ask, "Have you seen anything wasted?" They would answer "No." I would assure them that the milk was put into the vats to make cheese, and that everything was done by us that could be done to get the best out of that milk. Yet those patrons would go away dissatisfied with my answer, and would perhaps think that I did not know much about the making of cheese. If one of these men comes to me now and says, "Why does it take so much milk make a pound of cheese in August?" I would go to the register and tell him it was because Mr. Smith, Mr. Brown, and Mr. Jones had so low record of fat in their milk for that month.

Mr. Ashley: Tell us if the factories now make a pound of cheese from less milk?

Mr. Eager: It does take less milk to make a pound of cheese where the fat test is in use compared with those factories which do not use the Babcock tester. I can confidently assert that it takes less milk to make a pound of cheese in my factories where we use the Babcock test than it does in your factories where the Babcock is not used.

Mr. Ashley: We have honest men in our factories.

Mr. Eager: And so have we. And they are more likely to be honest and remain honest where there is a registering of the richness of the milk by the Babcock.

Mr. Brentnell: Can't a maker who uses the Babcock steal also?

M. Derbyshire: The Babcock hinders that. You see the *total* of the product is divided between the patrons. Where can he steal?

Mr. Eager: I would like to be shown how any man can do the right and honest thing with those who furnish good standard milk except he pays according to the fat contained in it. Why should those who furnish rich milk carry those who send poor

milk below the standard in fat? It is hard, I admit, to get people out of the old rut. But things are improving. We have now three classes of men: The theorists or scientific men, the practical men, and the kickers. The theorists have their place, and science has done much for the cheese industry. We owe the Babcock tester to one of these theorists. But the scientists could do but little for us were it not for the practical men who take hold of the plans, and utilize the plans of the theorists; and it is to the hard-headed, practical men that we must look for advancement in these matters. Our conventions are of benefit only as far as we use them or follow their teachings in a practical manner. There are some farmers who are always complaining; but if you go to their cow stables you will find that the thermometer will go as low there as it could out of doors. They are not learning; certainly they are not applying what little knowledge they possess, and yet they go on. All that Mr. Derbyshire said this morning about corn and cheap fodder is true. But what surprises me is that while we talk corn at our conventions from start to finish, how many farmers build silos? How many farmers build really comfortable stables for their cows? And yet we all know that good stables and cheap feed are the two essentials of successful dairying. Look at our own dwelling houses. Take one that is well and comfortably built, and another that is badly built, and how soon we want to get out of the latter when trying weather comes. Cattle are more responsive to good or bad quarters than we ordinarily think. In conclusion, I would say that an important point in dairying is the weeding out of poor milkers. This needs only to be mentioned to get your approval. Yet how little selection of good milking cows there is on the average farm. We have cause for satisfaction in the fact that no other branch of farming has suffered as little as our own during the past twenty-five years. Therefore I advise you to stick to your cows—that is to the generous milkers—and make them as comfortable as possible. Do not be discouraged over a temporary decline in the price of cheese. There is still plenty of room for fine goods. Let us aim to make the best cheese possible as cheaply as we can.

Mr. STILLMAN: Does not a certain amount of butter-fat go off in the whey, and would not a greater amount go off in the richer milk?

Mr. EAGER: If you will permit milk to remain in the can until the cream comes to the top in a tough and leathery condition, there are portions of that cream that the rennet will not get hold of in the vat, and that will go off in the whey. But where the milk is properly taken care of, and is not allowed to get into that leathery condition, when the rennet goes in nearly all the butter-fat is incorporated in the curd, and so you get the benefit of it.

Mr. STILLMAN: What care would you take of it?

Mr. EAGER: Use the aerator, or else stir it in the can with a dipper, taking the milk at the temperature of the atmosphere, and next morning you will not find the cream tough and hard, but softer, and more likely to be incorporated into the cheese. Of course it will be tougher in the spring.

Mr. MCCARGER: Do you not think the aerator better than stirring? Is not the latter likely to break the butter?

Mr. EAGER: Yes, it is better done by the aerator.

Mr. STILLMAN: Is there any more waste of fat in rich milk?

Mr. EAGER: In November, 1893, I had one of my makers experiment with a vat of milk, which averaged 4.45 per cent. of fat, and was in first-class condition every way. After making the cheese he tested the whey for fat, and found that there was less fat in the vat than when cheese was made in June from milk averaging 3.3 per cent. of fat. So you will see that the idea does not hold good that there is more waste of butter-fat in the case of the richer milk. I feel confident that if we would all try to get the milk to the factories in first-class condition that, with our excellent cheese makers, we would astonish the world. But where you see milk cans coming to the factories in a filthy condition, and everything looking more or less dirty, you cannot expect much.

Mr. STILLMAN: Those cheese ought to taste "strong." (Laughter.)

Mr. McCARGER: How do you account for greasy curd? Have you any down in your part of the country?

Mr. EAGER: Well, you have got me. We have greasy curd sometimes, but we have not been able to account for it.

Mr. MURPHY: Our maker says that it is caused by ripening the milk too much and not using enough rennet.

SEVERAL VOICES: "That's it," and "Hear, hear."

Mr. EAGER: My maker found this condition of affairs more likely to occur when the weather was very dry.

Mr. STILLMAN: Will Saturday night's milk make as much and as good cheese as that of other days?

Mr. EAGER: If Saturday night's milk is well cared for it will make as good or better cheese than that of Monday.

Mr. WHITTON: Are you thoroughly convinced that using the aerator is the proper method of airing milk?

Mr. EAGER: Yes.

Mr. WHITTON: I thoroughly agree with you. With the dipper you can aerate the night's milk, but the morning's milk will get no aeration at all, as that milk is put into the can and sent to the factory with the night's milk. I think it would be a great improvement if the morning's milk was aerated as well as the night's milk. In aerating Saturday's milk get it as cool as the atmosphere or cooler, cover the can with a blanket, and that milk will be as sweet on Monday as that of any other day, and it will make good cheese. Keep it out of the sun however.

Mr. T. J. THOMPSON: Is there more cheese made from a Jersey cow's milk than from any other breed?

Mr. EAGER: Prof. Van Slyke says that when you get above five per cent. butter-fat in the milk it does not pay any better than milk a trifle poorer when made into cheese.

Mr. T. J. THOMPSON: Do you think that adding one or two per cent., as advocated by Prof. Dean last year, is right?

Mr. EAGER: Prof. Dean will be here to-morrow and will answer that.

Mr. W. W. GRANT: In travelling about as cheese inspector and instructor there is plenty of opportunity of finding out the troubles that prevail in the factories. The cheese makers have an abundance of questions to put to us regarding their difficulties. One of the most common mistakes made in cheese making is over ripening the milk before adding the rennet. I consider this a serious error, because if the milk is over ripened the solids are precipitated and broken up so that the rennet cannot properly perform the work of coagulation, and consequently there will be a loss in the whey and in the yield of cheese. In one factory that was making thirty cheese a day, I went and made one cheese more a day from the same amount of milk. Now that maker had been allowing one cheese to run out in the whey each day, which means a considerable item in the profit and loss account. With milk which is over ripened, and with milk generally, if you do not get the curd properly cooked you cannot get the proper body to your cheese. A good deal of our cheese throughout the country is short in the grain, and the body is not as elastic as it should be. I do not think a curd can be properly cured in two hours. Cooking a curd is like baking bread—it needs a slow, thorough fire. Milk is a liquid, but it contains certain solids, some of which are held in suspension and others in solution. It takes time to get the dairyman to understand the properties of the milk he supplies. If the cheese maker will try and get his patrons to take good care of their milk the ordinary troubles can be easily remedied. Very often, however, the fault is with the maker. He is sometimes too careless in receiving inferior milk. If he sent such milk home it would create a change. Regarding greasy curd, I think it is caused mainly by the over-ripening of the milk and harsh treatment. But if milk is gassy on account of being made from

impure milk, it cannot be expected that the cheese will be as good as if made from pure milk. This fermentation or gas in milk prevents the rennet from coagulating, and therefore I think it is necessary to use more rennet with gassy milk. I have seldom found a cheese maker who had any fault to find from using too much rennet. I think, too, that too many thermometers are wrong. I have found about one thermometer out of ten right as I have gone among the factories.

Mr. STILLMAN: What is the cause of grassy milk?

Mr. GRANT: There are a good many causes. Two years ago last summer, early in the season, I had some bad milk, and because the day was cool it was harder to detect the odor of the milk; still I had what cheese-makers call a "regular stinker." I put a teacupful of milk from each patron in a bottle, and I found that the milk of one patron had the same odor. I went to the place the same evening, and found they had been drawing out manure, and that the milk had absorbed the flavor. Another cause of gassy curds is to be found in the condition of the old milk stands. In old sections gassy curds are getting worse, and in new sections there is less of it. If you keep milk in a pure atmosphere, I do not think you will be much troubled with gassy curd.

Mr. ASHLEY: You say that the cause of some cheese being bad is the fact that the cheese has been overripened. Can you tell us when the milk is just ripe enough?

Mr. GRANT: Most of the cheese-makers use a rennet test. By the action of the rennet we can easily tell the state of acidity or ripeness of the milk. I consider the rennet test perfectly reliable. Of course you must have your standard. A drachm of rennet will coagulate eight ounces of milk in about twenty seconds in the spring of the year Of course the rennet test will not work the same at all seasons of the year. Much will depend, however, whether you set your milk at eighty-six degrees or eighty-four degrees or eighty-two degrees. It should be set so that it will dip in not less than two and a half hours. It would be all the better for three hours. Dirty cans are also a cause of gassy curd. I have seen old cans on which, if you scraped your nails up the side, you would get a lot of ancient yellow matter which had been attached to the can, and that would make gas. (Laughter.)

Mr. POTTER: What time do you think is necessary to heat the curd?

Mr. GRANT: Keep up the heat gradually. Stir the curd ten or fifteen minutes before you put the steam on. It is a mistake to think that you get a good curd by heating up too rapidly. What do you think of cheese being porous on account of not being properly cooked? The moisture being kept inside by hasty or imperfect cooking renders the cheese porous.

Mr. MURPHY: Are not these what are called mechanical holes or pores?

Mr. GRANT: Perhaps so; but it is porous cheese.

A MEMBER: What is the standard time for cooking?

Mr. GRANT: If you set it to dip, in three hours, have it coagulate in half an hour. Stir and dip fifteen minutes. That would mean three-quarters of an hour, or perhaps an hour. Stand an hour rather than half an hour.

Mr. POTTER: At what degree do you set?

Mr. GRANT: I begin at eighty-six degrees, and get up to ninety-eight degrees or one hundred degrees.

Mr. POTTER: What gives us the cracked surface on the sides of cheese?

Mr. GRANT: It may be on account of having greasy curds. The grease will be pressed out and the rind will crack.

Mr. POTTER: Do you think it is because it is put to press too cold?

Mr. GRANT: In the summer time we do not get curd too cold.

Mr. POTTER: I have seen curd that would not press together in the summer.

Mr. WHITTON: Do you think that putting cheese to press too quickly after salting may have caused that? The curds at that stage would be coarse and would not knit together.

Mr. GRANT: Sometimes the bandage is too loose upon the cheese. I would advise putting on a fifteen and one-half inch bandage to a sixteen-inch hoop.

Mr. POTTER: I have heard cheese-makers claim that the curds should be put to press fifteen or sixteen minutes after the salt is applied, but I do not think it could get mellowed down in that time.

Mr. GRANT: You are right. Some of the coarse salt used may be fit to give to cows, but it does not do for cheese. "White whey" is also caused by imperfectly cooked curd.

A MEMBER: I have found difficulty in getting my bandages to fit my hoops.

Mr. KIDD: I use a bandage half an inch smaller than the hoop, and it makes a neat looking box. I use a tin hoop with an upright press. We use a bandage for filling, and it is nearly three-quarters of an inch less than the hoop.

Mr. ANDERSON: At what temperature would you advise us to set a fast-working curd?

Mr. GRANT: I would set it lower. By using a little more rennet and setting at a lower temperature you might get ahead of the acid.

Mr. POTTER: Do you think the water vat an improvement on the steam one?

Mr. GRANT: Perhaps it would be if the vats would hold water.

Mr. DILWORTH: Have you ever found the presence of rainwater in the milkcan to interfere with the flavor of the milk?

Mr. DERBYSHIRE: Honest rainwater that comes right straight down from heaven is all right. (Laughter.)

Mr. GRANT: Prof. Dean says that it does affect milk.

Mr. A. W. FREE: Do you think that allowing milk to freeze would have any effect upon the grain?

Mr. GRANT: No.

Mr. MCCARGAR: Do you find the grease any worse when patrons cool their milk down with ice?

Mr. GRANT: No; because, as a rule, people who cool their milk with ice are usually very good dairymen. Such people are likely to aerate their milk

Mr. MCCARGAR: Is there any danger at all in using ice where aeration is done?

Mr. GRANT: Yes. It is not wise to cool it too much below the atmosphere. If set in a foul atmosphere the milk will absorb foul odors.

Mr. MCCARGAR: I think all animal and other bad odors should be taken out before the milk is cooled.

Mr. KIDD: If you do not take out the bad odors then, you cannot get them out later.

AGRICULTURAL GRASSES.

Mr. JAMES FLETCHER, of the Central Experimental Farm, Ottawa, delivered an instructive address upon the subject of "Agricultural Grasses," which was listened to with keen interest by those present. He said: There are few experiments now in progress on the Central Experimental Farm which are of more interest to visiting farmers than those which during the last seven years have been carried on regularly with the native and introduced grasses. It is not necessary to point out to a farmer the great importance of the

various members of the grass family which provide so large a proportion of his own food and that of his stock. All the cereals, including Indian corn,—concerning the virtues of which in these days of ensilage worship nothing need be said to dairymen,—wheat, barley, oats, etc., are true grasses, as well also as the gigantic bamboo which in the tropics rises to a height of 100 feet, with a stem at the base nearly as large as a man's body. We in Canada have no less than 300 different kinds of grasses, native or introduced. Some of these, of course, are very much more valuable agriculturally than others; and, besides this, they vary among themselves in value for different purposes, some being useful when grown on one soil, but of little value when placed under circumstances which do not suit them. In these experiments we have had under consideration about two hundred different kinds of grasses. Seeds of our wild native species have been procured whenever possible, as well as all kinds of fodder plants which are advertised as useful in seed catalogues. We have found that several of our native species are well worthy of cultivation for hay and pasture and are as well suited, if not better, for paying crops in some part of Canada than many of the expensive imported varieties. It may not be amiss to state here what are the requirements of good agricultural grasses. First of all, they should be heavy croppers, so as to give enough crop to pay well for the use of the land; secondly, they must be hardy, so as to stand the climate; thirdly, they must be rich in nutritive constituents so as to be worth growing; and lastly, they must be palatable so that they may be eaten readily by stock. A knowledge of which grasses are best for certain lands or for certain conditions of climate, is of great value to those striving to make the greatest success of their farming operations.

There is no doubt that, on the whole, timothy is the most popular grass grown in Canada, and this is justly the case, for there are certain characteristics which make timothy a paying grass under most circumstances; but, notwithstanding this, timothy is not under *all* circumstances the most remunerative grass to grow. Let us examine some of its qualities. First of all it is well known, the hay is easily pressed and handled, it is heavy for its bulk and is nutritious; not only is it easily handled as hay, but this is the case also with the seed; and the seed is easily cleaned and has the further convenience of always being obtainable. Timothy hay is so well known in the market that it always sells well; but for all this timothy is not always the best grass to grow. I will mention one or two of the defects which show that it is not a perfect grass and, therefore, should not be grown to the exclusion of all others in all localities. In the first place, it gives very little aftermath. It does not stand close cropping like many other grasses; horses, sheep and pigs are apt to crop it too close and injure the roots. In the way in which it is generally mixed for a hay crop, that is with common red clover, it is apt to be injured if cut when the clover is at its best, because, although so much grown together with it, common red clover is ready for the mower ten days before the timothy. When cut too soon, the bulbs at the bases of the stems of timothy are injured and there is only a weak growth afterwards, which is frequently winter-killed, and the bulbs are often injured by mice and insects. Now I am not saying that timothy is not a valuable grass, but that it is frequently grown without a sufficient amount of thought being given to the matter of what it is being grown for. Timothy is essentially a hay grass and an extremely valuable one. If it is desired to grow timothy and clover together, the Mammoth Red clover should be used, because that variety comes to maturity at the same time as timothy. For mixing with the Common Red or June clover, Orchard Grass is decidedly a better grass from the fact that it blooms at the same time as the clover and is an enormous cropper. It is a grass which I believe ought to be far more grown than it has been. I am surprised that the dairymen of Canada, who have made such strides in pushing forward their calling, have not paid more attention to this grass. It is of most luxuriant growth and gives a large quantity of nutritious and succulent feed, probably more than any of the cultivated grasses, except Indian corn. I may here point out that, where Indian corn can be grown successfully, that one plant solves the problem of producing the largest amount of good succulent and nutritious feed from an acre of land; but even in districts where corn can be grown satisfactorily, the finer grasses will be found very valuable as a supplement or for variety.

I shall only draw your attention to day to a few of the best grasses; however, I would mention that careful notes have been taken concerning all the varieties experimented with; and, if any one requires information upon them, he can get it by applying to me at Ottawa. The plan which has been adopted in experimenting with these grasses is ts propagate each variety until we have a sufficient quantity to plant one square rod; then notes are taken upon the habit of growth, time of flowering, quantity of crop, and the quality is decided by chemical analysis. These plots, it is thought, are sufficiently large to give a good general idea of any particular grass experimented with. Each variety is tried in two or three different kinds of soil, and those which are considered most promising, are cultivated in much larger plots. I have spoken of some of the good points of Orchard Grass, and I hope some of you will try it. It is very valuable on dry lands. During the past summer I saw it thriving in the dry interior of British Columbia; but, at the same time, it thrives better, like most other grasses, on rich, moist soil. It will succeed even better than timothy on dry lands, and roots much deeper. Timothy is short-rooted and, feeding near the surface of the soil, is very exhausting as a crop. This is the reason why, unless it is top dressed, it seldom gives a heavy crop after the second year.

Another grass to which I would draw your attention now is the Meadow Fescue and its variety, the Tall Fescue. These are excellent perennial grasses which will produce an abundance of both hay and pasture. Some of our native grasses are also well worthy of mention.

For low land, Blue Joint is one of the most valuable. It grows naturally in marshes and along streams in all parts of Canada, but is seldom cultivated. This, however, might be done with ease by anyone who knew the appearance of the grass and would take the trouble to collect the seed. The stem is very leafy from the top to the bottom, and the flowers appear in the beginning of July. It will produce a large crop of hay of very fine quality, and a good deal of feed later in the season.

Growing in similar places may be found the Canary Reed grass. This is a much coarser grass than Blue Joint, but is of value as the succulent leafy stems are produced in great abundance early in the season. As early as the 3rd of June there will be stems over three feet in height, which is higher than spring rye at that time, and gives a much heavier crop of grass. This grass does not produce very much seed, but when once established on low or swampy lands it spreads rapidly by underground stems, and, as it does not root very deeply, it can be easily eradicated when that is thought desirable.

Perhaps the most valuable, as far as nutritive qualities are concerned, as well as for the amount of excellent feed which it provides, is the much despised wild Canadian June Grass, or Spear Grass, as it is sometimes called. I think that perhaps the reason why this grass is so lightly esteemed is a want of appreciation on the part of farmers of the fact that it is essentially a pasture grass, and not a hay grass. As a hay producer it gives a very light crop of wiry, stemmy hay; but, in the early spring, and from summer until frost comes, it produces an enormous quantity of succulent green leaves of the very best quality, and, within reasonable bounds, the more it is cropped by stock the more feed it will produce. The proper name of this grass, which is used exclusively in England, is Smooth Meadow Grass (*Poa pratensis*), and it is the same grass which has made the State of Kentucky celebrated under the name of Kentucky Blue Grass. Now, it should be remembered that this grass is not "similar to," or "something like," but actually identical with the Kentucky Blue Grass, and the only difference is that, when you want to buy the seed, if you ask for it under the name of Canadian June Grass, you will pay about $1.25 a bushel for the seed, whereas if you ask for Kentucky Blue Grass, you will pay a good deal more for the same thing. (Laughter and applause.)

Closely allied with June Grass is the Flat Stemmed Meadow Grass, generally known under the name of Wire Grass. This is an extremely nutritious grass, and, although it produces rather a light crop, it is an exceedingly valuable variety for sheep pastures and dry uplands.

One of the imported grasses which I believe will be of great value to Canadian farmers, particularly in Manitoba, the North-West and British Columbia, is the Awnless Brome Grass which was introduced some eight years ago by the Experimental Farm, and of which samples have now been distributed to all parts of the Dominion. Such reports as have been received have been uniformly favorable, and I am sure that the addition of this plant to our known fodder plants has been of enormous benefit to stock-raisers and dairymen. It produces a heavy crop of excellent hay, and, although rather coarse in texture, is very palatable, and has a sweet odor. In the eastern provinces this grass will not be such a boon as in the west. It has one drawback, namely, that it increases with a running root-stock very similar to that of the well-known pest Quack Grass. This may be considered a great detriment by some; but, as in the case of Quack Grass, I think it will probably be only lazy people who will neglect such a valuable grass for the sake of a little trouble in getting rid of it when that becomes necessary. There are, too, on all farms many small pieces of irregular or broken land, as the corners of fields where such a grass could be cultivated in the place of the weeds which now occupy these spots.

In addition to the grasses which have been grown separately at Ottawa, we have tried a great many hay and pasture mixtures which have given good results in a greater or lesser degree. There is one mixture which I have now tried for four years, and which attracted a good deal of attention from visitors last summer. This mixture was composed as follows:

Timothy	6	pounds.
Meadow Fescue	4	"
Orchard Grass	2	"
June Grass	1	"
Mammoth Red Clover	2	"
Alsike	2	"
White Clover	2	"
Lucerne	2	"

In all twenty-one pounds of seed. This has given three heavy crops of hay, and will now produce pasture for another two or three years, when the land may be broken up again with ease, for none of the varieties used are of a persistently aggressive nature; consequently, when the land is required again for alternate husbandry it will be ready for use after a single plowing. Should the land be low and wet, one pound of Red Top seed may be added to the above mixture. Of all the general mixtures we have tried—by a general mixture, I mean one that is suitable for ordinary good farm land, upon which ordinary crops can be grown—the above has given the best satisfaction; the grasses mentioned will thrive well in nearly every part of Canada, and what is of great importance, the seed of all the varieties can be obtained without difficulty. Before sitting down I should like to draw the attention of those present to one of the clovers I have recommended, namely, Lucerne, which is also known in the west under the name of Alfalfa. Where this clover will grow at all, it is a very valuable fodder plant, and if cut when young, gives a very heavy crop of succulent, nutritious and palatable feed. When made into hay it also produces an article of the very best quality. I am aware that it has been tried by a few in this part of Ontario, but I think it is worthy of the attention of all. There are many other kinds of grasses and fodder plants of which I could speak, but I think it will be more profitable if those present will indicate by questions upon what varieties information would be most useful.

A MEMBER: Have you any experience with a grass called Saccaline?

Mr. FLETCHER: We have another name for that plant, and it is "Humbug." (Laughter.) We have a circular from the men who are selling the seed that it will give fifteen or sixteen tons of fodder to the acre. It has been recommended to us as a fodder plant that would grow on dry land and be very succulent. It is highly improbable that it will succeed with us. It grows along the rivers in its

native island of Saccaline. We grew it at Ottawa, and it looked nice and succulent until early in June, when it was frozen to the ground. It shot up again about two feet, but the whole growth was of a harsh, woody nature, and had very little nutritious value. There is nothing in it that would recommend it to the farmers of Canada.

A MEMBER: What is the best mixture for a lawn?

Mr. FLETCHER: For a lawn there is no grass anywhere that can surpass our own June Grass. You need to take into consideration what is desired in a lawn. You want not only an even texture, but also an even shade. These can be secured only by sowing one grass, and the best for this purpose is our own Canadian June Grass, or as it is called in England, Lawn Grass.

Mr. C. NELSON: I like your mixture well except the lucerne. I have grown lucerne on my land and I could not get the mower to cut it, nor could I get my team of horses to plow it up. (Laughter.) I had to get the boy to take an axe and cut it up. (Renewed laughter.) I dug down and found the roots three feet deep. One man examined a stalk and root and thought it was a rose bush. (Loud laughter.)

Mr. FLETCHER: I think you cut it too late. As to the length of the roots, they will run six feet without any trouble.

Mr. STILLMAN: I found a root that reached fifty-four and one-half inches.

Mr. FLETCHER: A deep root is an advantage as it carries down deep into the soil that most valuable fertilizer, nitrogen, which the plant takes from the air. We tried all the different kinds of clover, and red clover and alsike went down nearly three feet. I think it would pay farmers to sow clover with every crop they sow, and later on plow the clover under for the great fertility the nitrogen contained in the crop gives to the soil.

Mr. NELSON: How would lucerne affect a new orchard?—it killed mine.

Mr. FLETCHER: In the United States all the legumes, such as the clovers and peas, are sown for plowing in, so as to enrich the soil.

Mr. W. MOORE: What do you think of Crimson Clover, as compared with other clovers?

Mr. FLETCHER: I do not think much of it. The hay is a fine soft sort, but it is not better than that of the other clovers. It is acceptable to a good many kinds of stock, but it has very little growth. I think it would be a mistake to grow it for the nitrogen it gathers. On account of being an annual it has small roots, and therefore gathers very little nitrogen. The other clovers lay by a store of nitrogen to feed the plant for future years. However, Crimson Clover is a good clover for bees.

Mr. MEIKLEJOHN: What kind of grass would you advise for old swampy land, say, one that had been a tamarack or cedar swamp?

Mr. FLETCHER: Red Top, Canary Red and Blue Joint, and also June grass.

ASSOCIATIONAL AMENITIES.

The Secretary then read the following telegram from the Western Dairymen's Association in session at Woodstock:

WOODSTOCK, January 8th, 1896.

The Dairymen of Western Ontario send greetings, and wish your Convention as great success as our own, now going on.

A. PATTULLO, President.

After the applause with which this fraternal message was received had subsided, the President read the following answer, which the Convention endorsed as its own unanimous sentiment:

CAMPBELLFORD, January 8th, 1896.

Thanks for your kind wishes, which are reciprocated by us. This, our first session, is a great success, over 300 farmers being present.

E. KIDD, President.

The Convention then adjourned, to meet at eight o'clock.

FIRST DAY—EVENING SESSION.

When Mr. C. L. Owen, ex-Warden of the county, took the chair at eight o'clock the Music Hall was packed to the door, and many people had to stand. Nevertheless, the order and attention was all that could be desired. The town orchestra was present and played acceptably.

Mr. Owen said : In the absence of the Reeve I have been requested to preside at this important gathering, and I consider it an honor to do so. The citizens of Campbellford are in hearty sympathy with this great dairy industry, so much so that we purpose entertaining the delegates to a banquet to-morrow evening, as a mark of our respect and appreciation. (Applause.) I wish to say, as a manufacturer, that the manufacturers are not enemies of the farmers. Let all classes of the community, farmers and manufacturers, producers and consumers, go on, hand in hand, in mutual confidence and helpfulness, and help to build up our common country. (Applause.)

ADDRESS OF WELCOME.

Mr. C. Smith, on behalf of the citizens of Campbellford, read the following address :

To the Eastern Ontario Dairymen's Association.

Gentlemen,—On behalf of the municipal council and citizens of Campbellford, in which you have been pleased to hold this your annual Convention, we have much pleasure in conveying to you a message of welcome.

We believe that dairying is an industry of the first importance to our country, and we trust that your sessions will be productive of benefit to the farming interests of this community as well as to yourselves.

As ours is mainly an agricultural country, we think that all efforts and organizations tending to promote the development of this industry should receive the support and co-operation of all classes.

It is evident that as mixed farming has become necessary we should all recognize the desirability of receiving instruction concerning the most effective modes of employing labor to obtain the best results in the arts of butter-making and cheese-making.

We extend to you the hospitality of our town, and trust that your stay amongst us will be mutually enjoyable and beneficial.

On behalf of the citizens,

C. L. Owen,
Chas. Smith.

The President : On behalf of the Eastern Dairymen's Association I thank you for your kind address of welcome. We accept it with great pleasure, and will be pleased to return to Campbellford at some future time. I must thank the citizens of this enterprising town for the generous and hearty manner in which they received our Secretary when he came here and solicited advertising for our prospectus. That pamphlet has been a credit to both the Association and the town, and, while we have received much benefit from its publication, Campbellford has also made a name for itself through its pages as a progressive and up-to-date place. I can assure you that the Association does not regret visiting your energetic town.

DAIRY EDUCATION.

Mr. D. DERBYSHIRE: I am sure I feel delighted to be in Campbellford to-night, to witness this magnificent gathering in the cause of progressive dairying. I have attended most of the dairy conventions for years, but I never remember seeing so large an attendance at the first day's sessions. Years ago Mr. Whitton said, "Come to Campbellford and you will have a grand time of it." I think he knew what he was talking about. I am glad to see a manufacturer presiding at this gathering of dairymen. (Applause.) Let us ever be a united Canadian people—not divided by class prejudices. I purpose to speak briefly to-night upon the subject of dairy education. We have cause for pride in the fact that the Ontario Government have established at Guelph an Agricultural College which is the best equipped and most effective of its kind on the continent of America to-day. (Applause.) That institution is for the benefit of farmers' sons, to show them how to engage in the farming business so as to make money and improve their standing in every particular. All these advantages are at a nominal charge—in fact in many instances free so far as the actual tuition is concerned. We have at Kingston another splendid institution in the school which gives more particular attention to the education of cheese and butter-makers. This, with the dairy school about to be established in Strathroy, in the western part of the Province, will furnish our young men with the easiest opportunity of mastering the principles of modern dairying. But while we are delighted with the progress we have made in extending our dairy business, and proud of our achievements when exhibiting against the world, we have still to go forward. The report of the Director of Agriculture at Washington is not very hopeful in regard to the dairy industry in the neighboring republic. Skimmed cheese, filled cheese and other adulterations have so depressed the markets that for years their exports for cheese have been going down. In 1880 we exported only $3,500,000 worth of cheese, and we thought we were doing pretty well. The United States in that year exported $12,900,000 worth. But last year—only fourteen years after—their exports of cheese had fallen to $7,500,000 worth of cheese, a decline of about 40 per cent, while our export of cheese has amounted to $16,000,000 in 1894, an increase of over 400 per cent. (Applause.) If we do what the Government is encouraging us to do, and use the facilities so freely provided us on every hand, we can continue to make and sell first-class cheese and butter, which will take the place of inferior goods from other countries. Let it ever be remembered that we want quality first. If we send our apples away let the apples be good all through the barrel. If we export dairy goods to Britain let us see that we send only the best cheese and the finest butter to that great food-consuming country. The poet has truly said: "The farmer he must feed them all." Yet he cannot do all the manufacturing there is to do. There is, too, a certain amount of independence on the part of the farmer, and a certain degree of interdependence also so far as his relations with the manufacturer are concerned. The little blacksmith shops at the corners have disappeared, and the large establishments are making better goods at lower prices. We cannot fight against a certain degree of centralization. In short the little home dairy, whether for butter or cheese, cannot successfully compete with the larger co-operative establishments. We must not attempt to make cheese for over six months—or perhaps for that length of time. Cheese should be made only while we have the best grass and the freest milk flow. Let us make butter in the winter time. We have the Mallorytown Butter Company established on a proper basis. It is well built, warm and thoroughly equipped. We have creamery stations, and the cream is sent to Mallorytown and there made into butter. The milk during the summer is made into cheese, but in winter they take off the cream for the Mallorytown butter factory and the skimmed milk is kept to feed the young stock. At Messrs. Dargavel & Murphy's establishment at Elgin they have the largest butter-making concern in the Province, and things are prospering there also. We must take these lessons to heart, and centralize our operations just as the manufacturers of other goods do. We are able to lead the world in butter-making as we do in cheese. At the Chicago Exposition I was proud of our display of dairy and other goods, but I felt

prouder as I saw the quality of the men from Canada who were over there. And if our men surpass those of other nations how much more do our ladies? (Applause and laughter.) And I am persuaded that the men and women engaged in this great Canadian dairy business will continue to lead the world.

THE CULTIVATION AND CARE OF HOUSE PLANTS.

Mr. JAMES FLETCHER spoke at considerable length upon the attractive subject of "House Plants, their Care and Cultivation." He maintained that there was no subject which affected so nearly the happiness and comfort of a home as a love of the beautiful in nature on the part of the better half of every household, whether she might be the wife of a diaryman, a farmer, a professional man, a plowman or a king upon a throne. Flowers might be taken to be types of all that was beautiful, and the speaker dwelt in eloquent and enthusiastic terms on the many beautiful forms presented by an intelligent study of the different parts of a plant. He drew attention to the beautiful shapes and colors of flowers and leaves, as well as to the symmetry and grace of the various bushes, trees and plants which bore them. The love of flowers, he claimed was a source of pleasure and comfort to everybody in all grades and conditions of life, particularly instancing the pleasure which could be given to a sick person by a little bunch of flowers. He maintained stoutly that a love of flowers, as well as a love for those who love flowers, was a part of the duty of the dairymen assembled. During the course of the address the attention of the audience was held by apt anecdotes and florid descriptions of the beautiful flowers and scenery which could be found in the Eastern provinces, on the Western prairies, even on the cold summits and slopes of the Rocky Mountains and in the dense luxuriant groves of the British Columbian woods. Having treated of the advantages of growing window plants as a beautiful addition to the decorations of a home, and spoken of the moral influences of cultivating and studying the beautiful, the speaker passed on to a detailed description of some of the easiest and best methods of cultivating and particularly of propagating some of the best known house plants. Flowers were grown for the beauty of their blossoms, their graceful foliage or their delicious odors. Some plants were far easier to cultivate than others, and he recommended from his own experience some varieties which had given the best results. Geraniums were given the first place as satisfactory house plants. These should be of definite colors but should not all be alike. It was worth while considering in the autumn what were the best varieties, so as not to care for a plant all through the winter which would not give an abundance of flowers with all the qualities desired. He stated that a little knowledge and thought of this matter would be well repaid by the results, and the names of the best varieties of scarlet, white and pink geraniums were given. Abutilons, Begonias and Fuchsias were treated of in a similar manner and many of the other old favorites—Calla lilies, Oleanders and Primulas came in for a share of attention. The best way of treating bulbs of various kinds was also explained, and in finishing up the lecturer advised all the ladies present to take every precaution to protect their favorites against the insects which sometimes trouble them in their houses. A pleasing analogy was drawn between boys and house plants, and it was shown how both responded readily to proper training and care. The use of soap was freely recommended, and although tobacco could not be advised for use by boys it was a very useful substance, and if the ladies present did not use it themselves it was suggested that they might get their husbands to do so for them, and the speaker felt certain from his own experience that the husbands would feel much better for it and the plants would be much improved by being cleared of their insect enemies.

After a cordial vote of thanks to the chairman and the orchestra, the meeting adjourned until 10 a.m. on Thursday.

SECOND DAY—MORNING SESSION.

After spending an hour in visiting some of the industries of Campbellford the members of the Association repaired to the Music Hall, where the President took the chair and called the meeting to order.

REPORT OF INSTRUCTOR BENSLEY.

Instructor BENSLEY read his report as follows: I have much pleasure in submitting this my third annual report to the Association of the work accomplished in the district allotted me for the season of 1895. The territory I had was the counties of Addington, Lennox and Frontenac. I visited 69 factories. The names of factories and number of visits each received are as follows:

Palace Road	3	Bedford	1	Sand Hill	2
Newburgh	3	Sharbot Lake	1	Glenburnie	2
Centerville	5	Oso	1	Arigan	2
Tamworth	2	Mountain Grove	1	Woodburn	1
Croyden	5	Arden	1	Central	2
Forest Mills	2	Long Lake	1	Cold Spring	2
Selby	2	Parham	2	Sunbury	2
Empey	3	Tichborne	2	Bear Creek	2
Camden East	3	Crow Lake	1	Keenan & Son	2
Enterprise	5	Wagerville	1	Maple Leaf	2
Sheffield	3	Inverary	3	Pine Grove	2
Clareview	3	Battersea	2	Pine Hill	3
Moneymore	2	Excelsior	2	Granite Hill	2
Albert	1	Model	2	Thousand Islands	1
Farmer's Friend	2	Wolfe Island	1	Morning Star	2
Cataraqui	3	Gilt Edge	1	Rose Hill	2
Glen Vale	2	St. Lawrence	1	Odessa	1
Forest	2	Silver Spring	1	Whitman Creek	2
Railton	2	Ontario	1	Deseronto	1
Harrowsmith	2	Lake Shore	2	Platt	1
Hartington	1	Union	2	Sillsville	1
Desert Lake	1	Perth Road	2	Bell Rock	1
Verona	2	North Shore	2	Moscow	1

In accomplishing this work I spent 145 days in the employ of the Association. The amount contributed by factory men for my services was $400. The net amount from fines was $125, making a total to the Association of $525. The number of patrons fined was thirteen.

As you are aware, the district allotted me this year was a new one to me, but, as in other sections, I found the same common fault prevailing among makers, namely, overripening their milk and running their curds too fast, which is very damaging both to quantity and quality of cheese made. I found makers running curds as fast as two and two and a quarter hours from time of adding rennet to dipping, when it should take not less than three hours, unless in case of gassy milk, which might be ripened a little lower. Another fault that was very noticeable among a great many makers was carelessness in style and finish of cheese, for which there is no excuse.

In conclusion let me give a word of advice to patrons. Use nothing but tin pails for milking in, keep them clean, aerate the milk properly, send it to the factory in the best possible condition, and by so doing you will greatly help the poor cheese-maker and benefit yourselves.

All of which is respectfully submitted.

G. H. BENSLEY.

Mr. WHITTON: Did I understand you to say that the prevailing fault was the over-ripening of milk?

Mr. BENSLEY: Yes, and this gives too tender a body to the cheese.

Mr. H. R. FREE: Do you not generally find the milk over-ripened in the spring?

Mr. BENSLEY: I find it during the whole season.

Mr. McCARGAR: Do you not find a number of makers keeping over a quantity of old milk in order to hurry up the work? I think it a mistake.

Mr. BENSLEY: So do I. I believe in a "starter" in the fall if they do not keep too much of it.

Mr. POTTER: Prof. Robertson advocates a starter all through the season, except perhaps in the spring.

Mr. RENNICK: If the milk was very gassy would you advise a starter?

Mr. BENSLEY: Yes, a little of it. In the hot weather you can ripen your milk in a reasonable time and consequently you do not require a starter. Much, of course, would depend upon the gassiness of the curd. With a gassy curd you might start to cook in two hours and a half.

Mr. McCARGAR: I think there is a loss in keeping over too much milk.

Mr. F. E. CLINE: Would you advise heating up gassy curd for a little while before stirring?

Mr. BENSLEY: Get rid of gassiness in the curd as early as possible.

Mr. WHITTON: The best way to kill it is for patrons of factories to take proper care of their milk.

Mr. R. W. WARD: Suppose you have to take milk and keep it standing for an hour, would you recommend a starter in that case?

Mr. BENSLEY: I do not think an hour would make much difference, but if you have to keep it two or three hours I would advise a starter. I do not think that the curd will cook properly in less than three hours at any time of the year. The curd requires more cooking in the fall than in the spring months.

Mr. WARD: Do you need to extend the time very much?

Mr. BENSLEY: You do not need to make much difference. However, the curd should be cut a little finer in the fall, which will admit of a more thorough cooking. I would advise four hours in the fall and three hours in the summer.

Mr. FREE: Suppose you find that your curd has a bad flavor, is it best to try to remove that flavor in the earlier stage?

Mr. BENSLEY: Yes, I think so.

Mr. McCARGAR: Don't you think a great deal of curds are injured in the making-room by having the factory too cold?

Mr. BENSLEY: Yes; the curd gets chilled, and you cannot make first-class cheese under these conditions.

Mr. DERBYSHIRE: It is good policy to heat not only the making-room, but also the curing room. Every room should be so comfortable that you could work with your coat off and look as if the surroundings agreed with you.

INSTRUCTOR GRANT'S REPORT.

Instructor GRANT then read his report, which is as follows: I have much pleasure in submitting to this Association, my second annual report of work done in the sections allotted to me, viz.: Peterboro', Campbellford, Stirling and Tweed.

In these different sections Campbellford was the only one in which nearly every factory applied for my services. Owing to the factories that desired my services being so scattered, a great deal ef extra travelling was necessitated, which took up much valuable time. The last month of the season I was assisted by my brother I. S. Grant, whose work, I believe, gave general satisfaction.

A number of factories in Belleville section applied for inspection during the latter part of the season, but owing to the amount of work I had to do at that time I was unable to visit them.

The work done by I. S. Grant will be included in this report.

Following is a list of factories visited :

Factory.	Visits.	Factory.	Visits.	Factory.	Visits.
Warkworth	3	Union Otonabee	2	Cook	2
Woodland	2	Central Smith	2	Clair River	2
Goose Creek	2	Tweed	1	Cherry Grove	3
Riverside	2	Ormonde	1	Cedardale	2
Aggett's Model	2	Ryleston	2	Evergreen	2
Newcomb's Mills	2	Valley	2	Forest	2
Trent Bridge	2	Victoria (Peterboro')	2	Keene	2
I X L	2	Victoria (Hastings)	2	Kingston	2
North Star	2	Roblin	2	Lakeview	2
Stanwood	2	Wicklow	1	Lang	3
Plum Grove	3	Warsaw	3	Maple Leaf (Peterboro')	3
Empire	2	Westwood	3	Maple Leaf (Hastings)	3
Crow Bay	3	Enterprise	2	Myersburg	2
Tweed	1	Daisy D	2	Monarch	2
Ormonde	2	Abbey Melrose	2	Marmora	2
Roundlake	2	Shearer	3	Millbrook	3
Ida	2	Spring Valley	3	Missing Link	3
North Dummer	3	Baltimore	1	Seymour West	2
Standard	1	Brighton and Murray	1	Stoco	2
Thomasburg	2	Big Springs	2		
Roseneath	2	Bensfort	2		

In accomplishing this work 129 days were spent and seventeen days taken up travelling, attending Cheese Boards and lecturng at factories, making a total of 146 days in the employ of the Associetion.

The amount contributed for inspection and instruction by factory men was, $339. Amount received from fines, $89. Total, $428.

In all 7,388 samples of milk were tested with the Quevenne lactometer and 4,995, with the Babcock test ; of this number fifty-two were found to be deterioated.

I dealt with twenty of the cases and the remaining thirty-two were looked after by the various factories in which they occurred, and as near as I could learn, the several factories collected from the persons accused the sum of something over $300 00.

I had five persons brought before a magistrate for milk adulteration, four were fined, one being dismissed without costs. One man appealed against the magistrate's decision to the High Court of Justice in Toronto, but the conviction was sustained and defendant paid all costs. The utmost caution was taken in every instance to prove either the guilt or innocence of the persons accused. I find it is only here and there in a factory, now, that people tamper with their milk. Still quite enough that they should be looked after.

In my report last year I made reference to a factory in which fines to the amount of $175 had been imposed. The factory was an old delapidated building, and unfit for the manufacture of cheese. The whey was returned to the patrons in the milk cans, and a large number of them tampered more or less with their milk. With the assistance of the president and directors of this factory I succeeded in proving the guilt of the several persons accused. Such a revolution took place in that neighborhood that, this year, I found a fine new factory, in which first-class cheese was being made, well constructed hog pens at a safe distance from the factory where the whey was fed sweet, and all the patrons sending good and honest milk.

It would be a material benefit to the cheese industry of Canada if many more such revolutions were to take place.

It is well known that the past season has been rather discouraging to factory men and cheese makers, more especially to the maker who has had little experience. Should the coming season prove to be a similar one there will certainly be a weeding out among the makers, and the skilful man may then hope to get a just reward for his services. Owing to the weather being so changeable in the fore part of the past season, the skill of our best makers was taxed to the utmost; nevertheless I think we received an experience which we may profit by in the future.

I heard a general complaint among the buyers last season that the cheese lacked body, caused, I think, by makers not using sufficient rennet, and not cooking the curds properly. If milk be set at the proper stage, and the curds well cooked when ready to dip, I maintain that the hardest task of the cheese-maker is over, because if a curd is not properly cooked it is almost impossible to get a good bodied cheese.

I find more trouble arising from too low cooking than from cooking too high. In many instances I found thermometers to be from two to five degrees out.

In conclusion, I would urge factory-men to have their factories properly equipped for the manufacture of first-class cheese, employ none but skilful makers, and pay them a reasonable salary.

Again, I would like to impress strongly on my fellow cheese-makers the great importance of giving to all details relating to their business the closest attention, for it is a business that will not admit of carelessness or neglect without loss of reputation, the loss of which makers cannot afford. And in justice to our patrons, who supply the milk, and are becoming every year more alive to their interests, and justly so, it behooves us to do all in our power to improve the quality of our product. This means better prices, and more money in their pockets. On the other hand, we will expect them to supply us with pure and honest milk, and by working harmoniously together, we will still be able to maintain the proud distinction Canadian cheese has already won.

W. W. GRANT, Instructor.

Mr. DERBYSHIRE: Regarding the prosecution of suspected patrons, do you not think this trouble of law trials, and the breaking up of church relationships might be largely avoided if men were paid by the Babcock test? Pay a man for what he puts into his can, for quality as well as for quantity, even if it be water. It is a humiliating thing to put a good Christian man into court and try to make him out to be a rascal.

Mr. DARGAVEL: Perhaps that will convert him. (Laughter.)

Mr. DERBYSHIRE: Perhaps it might. But, seriously, I would like to see a plan adopted which would do away with all these charges in the court. (Applause.)

Mr. EAGER: How many cheese factories in your district pay according to quality?

Mr. GRANT: I think there are five in the county of Peterborough. I visited only one of them. They did not require any milk inspector at these factories. (Applause.) There is another factory in Hastings county paying according to test of butter-fat. I do not know of any in Northumberland, but there is one in Prince Edward.

Mr. MCCARGAR: Do you not believe that if milk was tested by the Babcock and paid according to its value, that it would relieve inspectors to a great extent and enable them to devote more time to the more legitimate and pleasant occupation of giving instruction in cheese-making?

Mr. GRANT: Yes. It is impossible to test milk in a large factory and give proper instruction in making and handling cheese.

Mr. EAGER: I think it is honest, just and right to pay by the fat test.

Mr. GRANT: In those factories where the test is used I believe the patrons take better care of their milk and are much more interested in the work done. In the milk

sent by one man the percentage of fat dropped from 3.8 to 3.4. He said he thought a mistake had been made in the registering. I told him that I did not think there was a mistake, but that he did not take the same care of his milk. I found that the milk was rather clotted; I had shoved some of these clots aside, as I thought such clotted milk would go off a good deal in the whey. He went home and stirred his milk, and thus incorporated that fat, and the test went up about half of one per cent.

Mr. DERBYSHIRE: I think that when the Babcock tester shows a man that his milk gives only three per cent. of fat, while his neighbor's milk runs as high as three and a half and four per cent., it starts an enquiry in his mind, and an enquiring mind is what we want. Such a man will at once start to examine his cows and weed out the poor milkers. This will also prevent suspicion among neighbors. It means a more friendly and united people, more cheese and better cheese. I believe the day will come very soon when you will find the people from one end of the country to the other demanding such square dealing. Good neighborship means that one man is a good friend of the next man, and that each will do the just and honest thing by the other. Now, suppose that I go to town with the President to sell our horses. Mine is worth $100 and the President's is worth only $90. The President says to me, "Mr. Derbyshire, we are good neighbors; let me get $95 for my horse, and you will get $95 for yours." But I will say, "My dear fellow, my horse is worth $10 more than yours, and I cannot afford to lose that by equalizing our values." So he gets $10 less than I do, instead of receiving the same amount of money, and he thinks it is not fair for me to get more than he does. But is it not? And the case is precisely so with milk, for there is a quality in milk as well as in horses. In the past we did not understand the fat test; but now in the Babcock tester we have a machine that will do the work cheaply and honestly.

Mr. JAMES MERRELL: Do you think the food has anything to do with the quality of the milk?

Mr. DERBYSHIRE: The character of the cow—the blood or breed of the cow—has more to do with the quality of the milk than anything else. You may say that the character of the cow fixes the quality of the milk, but that the food will improve the amount of milk given on account of the better condition of the cow. The Jersey cow's tendencies prove that that breed has been encouraged to give a lot of fat in her milk, and she is more particularly a butter cow; but a Holstein will give a greater flow of milk, as it has been bred to furnish milk to cheese factories according to weight, and not according to quality. But the main thing in furnishing our milk on the co-operative plan is to get the business down to an honest basis.

Mr. MERRELL: Is not the milk containing more fat and other solids heavier than poorer milk?

Mr. DERBYSHIRE: Yes, a little.

Mr. EAGER: I am greatly interested in this matter. The Babcock tester is revolutionizing things. But some farmers say, "You don't tell it all. It adds to the expense of running our business, and that is not wise to do in a poor year." Now, there is such a thing as being penny wise and pound foolish. In this dairy business the better we can put our work upon a good paying basis the better for us. I will tell you how we can work it. We have combination factories in the east. These are owned by one person, or firm, or by a joint stock company, being under a single control. If you have not such a combination, you might still work out the idea so far as the test is concerned by about twenty-five factories agreeing together to hire a competent man to do the work for all. In our combination we test every two weeks. The milk is taken from the can after being stirred with a dipper, and we have a sample bottle for every man's milk. The bottle has a wide mouth, a large neck and a good cork. These bottles are then placed in a rack, and this is done daily for two weeks. At the end of that time the milk is tested by a competent man. Hire the very best man you get to do this work. We pay our man what some people would term a big price, but it pays us to do so; and what is the result? Things are working in a different shape altogether. The people enquire why they do not get as good a result from the test

as others do, and they soon decide to look better after their milk and see if that will help in the test. The fellow who is slipshod and doesn't want to do as he should will be brought to time just here. When he was pooling his milk he didn't care; but now he has to look out for himself. The use of the Babcock tends to get people out of the rut and causes them to put more care and intelligence into their work. You will find that paying for milk according to quality is the proper way, because it is the honest way.

Mr. DARGAVEL: How do you manage to keep it for two weeks?

Mr. EAGER: We use bichromate of potash, and we have little or no trouble with it. We warm our bottles before making the test, and get everything in them well mixed. We have an honest people in our section, but they are more satisfied since we adopted the Babcock test.

Mr. FREE: Is a less amount of milk required to make a pound of cheese since you adopted the Babcock?

Mr. EAGER: Yes.

Mr. DARGAVEL: Do you require more men in each factory under the test?

Mr. EAGER: No; I have only one man for all my factories.

Mr. POTTER: Can you not keep the milk for a month for less frequent testing?

Mr. EAGER: I hardly think so. I would not like to try it.

Mr. POTTER: I have done it for a month, and it proved successful.

Mr. EAGER: I am glad to hear that. But we were afraid to try it for fear the patrons would object. We did, however, keep samples from November till March, and when we then tested the milk we found it to agree exactly with the test made in November.

Mr. MCCARGAR: In practising this test, do you think it makes any difference whether you pour the acid straight into the milk or along the sides of the bottle?

Mr. GRANT: It does make a difference, and requires some experience. If you pour the acid right into the milk the action will be too sudden, and the fat will get dark. Hold the bottle slanting and let the acid run under the milk as much as possible. If you happen to let it drop into the centre it will curdle.

Mr. EAGER: That shows the importance of having a thoroughly competent man. In comparing the two systems—the old one of pooling milk, and the new one of paying according to quality,—I say again that the first is absolutely wrong, because it is dishonest. A few years ago we had nothing better than the pooling system, but now we have a better plan, and we must adopt it or other people will take our business from us.

The PRESIDENT: Do you add two per cent. to the readings?

Mr. EAGER: No; we go absolutely according to the readings. If we add two per cent. a man will say: "Why do you add that two per cent. if the Babcock test is absolutely correct?" But if we find later on that it is better to add two per cent. to the readings, all right. But at this early stage it is not wise to make the people suspicious.

Mr. MORDEN: That factory in the county of Hastings which uses the Babcock tester is within three miles of my home. All the patrons I have talked with seem to be satisfied but one, and he is a man who does not take care of his cows. This year they have added the two per cent., and appear to be satisfied with it.

Mr. FREE: I am thoroughly in favor of the Babcock tester. It has been very badly represented from the start. At first it was said that it was so very simple that a child could handle it. Now we are told that only a competent man can manage it. In pouring in the acid you certainly should give it careful direction. There is a trouble in paying by the Babcock test. If it is handled properly it is an advantage, but if it is not carefully and properly handled it is unfair. It requires a first-class man if justice is to done to all parties, and you are to retain the confidence of your patrons. Unfortunately to-day every man is after the man who will run the factory cheaply. If we are to have

good cheese, we must have good men to make it. I did not pay by the Babcock test this season, as I was not certain of its manipulation. However, I know more about it now.

Mr. McCargar: If you do make a mistake with one man occasionally, is that as bad as making a mistake continuously with the best patrons under that pooling system?

Mr. Purvis: The trouble down in the county of Glengarry is exactly as Mr. Free has said, on account of the cheese-makers being required to do the testing. There are some makers there who never saw the Babcock tester until the machine was sent to them with instructions, and that bred dissatisfaction. Patrons feel, in some cases, that the makers do not understand the system.

Mr. Derbyshire: That is just what Mr. Eager says. He tells us that one good man can test for twenty factories, as they happen to be located within convenient distance of each other. If each factory will pay its proportion of the test it will come light so far as expense is concerned. It has got to come. The people will demand it, just as quickly as the farmers come to clearly see that this thing is all right. This method of paying according to the quality of the milk has got to come, because it is based upon an honest principle.

THE HORN FLY.

By special request of the directors Mr. Fletcher gave an address upon the horn fly. He said that as Dominion Entomologist he found that dairymen, as well as all others engaged in the various branches of farming, found it advisable to consider some of the subjects in the study of which he was engaged. There is no branch of agriculture in which information is not frequently required concerning the losses from injurious insects, and dairying is no exception to this rule. Perhaps the insect which has caused the greatest amount of loss to dairymen during the last three or four years is the so-called horn fly. These losses, both in dairy products and in beef, have drawn the attention of the most careless. The horn fly is not a native, but was introduced into America, probably into the State of New Jersey, about the year 1887. Thence it had spread rapidly in every direction, until the year 1892, when the first specimens were taken in Ontario at the end of the month of July. A character of the occurrence of this insect in any locality was that for one or two years it appeared in enormous numbers and did much harm by worrying cattle which, in consequence, fell off considerably both in flesh and in the quantity of milk produced. The latter loss was so great in some districts in Ontario during the year 1894, that, according to reliable data gathered from managers of cheese factories, it attained the enormous proportions of nearly half of the whole supply of previous years. This great decrease naturally drew the attention of farmers, and many adopted the practical remedy that had been devised by entomologists (that is, those who made a special study of the lives of insects), and the means of preventing their injuries. The speaker had had an opportunity of studying the horn fly soon after its first appearance in America. He had had the good fortune of taking a trip for this special purpose down into Virginia with Mr. Howard, now the United States Entomologist. An important advance was made when it was found out definitely how the insect passed through all its preparatory stages.

It was perhaps unnecessary to explain to those present that all insects passed through four stages First of all there was an egg, laid by a female, from which was hatched the second stage, called the larva. This varied in form in the different orders of insects, and popular names were given to each, as, for instance, the larva of a fly is called a maggot; of a beetle and wasp, a grub; of a moth or butterfly, a caterpillar, and so on. Such indefinite terms as "worm," which is generally applied to any larval form, should not be encouraged, because there are proper terms, which are much more definite. In the case of the horn fly there were many inaccurate statements made upon its first appearance which were the cause of much loss of time and useless work on

the part of farmers from mistaken ideas as to its life history. For instance, it was stated freely through newspapers that the eggs were laid on the horns of cattle, where they hatched and ate their way into the head of the animal, or that they were laid on other parts of the body and then fed inside the animal. It was a common practice at one time for farmers to tie greasy or tarred rags round the horns of animals to keep the flies away. All of this was useless work, and must have been very unpleasant for the animals so treated. The complete life history was worked out very soon after it first appeared in America, and within a month after its appearance in Canada published information as to its life history, and the best remedies were available for all who applied at the Experimental Farm. A short bulletin, No. 14, on this subject, was issued early in September. The speaker here urged all farmers present to apply promptly to the Experimental Farm to try at any rate whether they could not get some useful information whenever they found insects troubling any of their crops, and he on his part would promise that they would at any rate get a prompt and courteous reply, which he also believed would be in most cases a means of saving much actual money. He went on to describe the stages of the horn fly as follows: The eggs are laid singly on the fresh droppings of cattle during the warmer hours of the day. This is the only place in which the eggs are ever laid. They are never by any chance laid on animals. They are very small, being only about one-twentieth of an inch in length and, unlike the eggs of most insects, are brown in color, so that they are not easily seen on the droppings. The young maggots hatch in less than twenty-four hours, and at once burrow a short distance beneath the surface of the dung. Here they remain until full grown, feeding on the liquid portions of the manure. This is their only food, and all stories about their boring into horns, brains or flesh of living animals are untrue. The maggots are full grown in about a week, when they are about three-eighths of an inch in length and of a dirty white color. They then burrow down into the ground a short distance, and the third or pupal stage is entered upon. This is about a week after the egg hatches. In the pupal stage the body contracts to an oval form, of a dark brown color, without any legs or means of movement, and in about another week the brown shell cracks and the perfect insect emerges as a fully developed horn fly. During the hot weather of summer all of the stages are passed through in from fifteen to twenty days, and there are several broods in the season. The last brood of maggots turn to pupæ in the autumn, and the flies do not appear until the following spring. The perfect fly is too well known to most farmers to need much description, but it may be mentioned that it is a small fly about one-third the size of the common cattle fly or the house fly, of a dark grey color. The head consists almost entirely of the dark red, silvery-edged eyes, and bears on its lower surface a black, dagger-shaped tongue, which is the cause of so much pain to cattle. When very abundant these flies gather in thick clusters around the bases of the horns of cattle and such other parts of the body of the animal where they cannot be dislodged by a stroke from the tail. When they are settling on the horns they are doing no harm at all, for they cannot injure the horn in any way, and when there they are at least not biting the animals. Instances have been brought under the speaker's notice of animals having been dehorned so that the flies might not settle on the horns. As far as the horn fly was concerned, this was not a wise practice, because when the flies had not the horns to settle on they did settle on the animals and certainly did there much more harm by biting. He stated that there was great difference in the susceptibility of various breeds and of individual animals, according to their nervous temperament and the texture of their skins. The bites produce great irritation, and sometimes large sores are formed by the animals licking themselves or rubbing against trees, posts, etc. From the history of the occurrence of this insect in America we were able to anticipate confidently that before very long the losses from its attack would decrease very appreciably. In fact there is every reason to hope that within another year or two the injuries will be so slight that little attention will be required. In the meantime, however, wise dairymen will protect their animals and their own pockets by making use of some of the simple, cheap and easily applied remedies which have been recommended.

The question of a remedy was not very complicated. The only treatments which would come under consideration were the application of some material to the animals which would act as a deterrent and would keep the flies from settling on them and biting,

or some manipulation of the droppings to render them unfit as a breeding place for the maggots. This latter was easily accomplished by breaking up the droppings at short intervals by means of a rake, a hoe, or some other suitable instrument, so that in hot weather they would dry up, or when it rained they would be washed away to such an extent that the maggots could not live in them. The duration of the life of the maggot is very short, at most not over a week. This is a provision of nature to enable them to attain full growth before the time at which under ordinary circumstances the cattle droppings would become too dry for them to live in them. This breaking up of the droppings could be easily done by boys going regularly through the pastures twice a week, but in the present case, where experience showed us that this attack was likely to be of only short duration, preventive remedies by which the flies were kept away from the animals were the best. For this purpose, it has been found that any greasy substances smeared on the animals' backs, or such other parts as were liable to attack, was sufficiently effective to make it a paying operation for all dairymen and owners of stock to thus protect their animals. A number of experiments have been tried with the result that common train oil, or any other common cheap oil, alone or with the addition of a little sulphur or carbolic acid, had been found to keep the flies away for two or three days. The addition of carbolic acid also had the effect of healing any wound which might have been made. The remedy which had been found most convenient for application on a large scale was spraying the animals with the kerosene emulsion.

This emulsion consists simply of a mixture of soap-suds with twice the quantity of ordinary coal oil, made as follows :

Kerosene (coal oil)	2 quarts
Rain-water	1 quart
Soap	2 oz.

Boil the soap in the water till all is dissolved ; then, while boiling hot, turn it into the kerosene, and churn it constantly and forcibly with a syringe or force pump for five minutes, when it will be of a smooth, creamy nature. If the emulsion be perfect it will adhere to the surface of glass without oiliness. As it cools it thickens into a jelly-like mass. This gives the stock emulsion, which must be diluted before using with nine times its measure, that is, twenty-seven quarts of water. It will be found to mix much more easily if done at once, before it cools.

The above proportions give three quarts of the stock emulsion which, with twenty-seven quarts of water added, make up thirty quarts of the mixture ready for use.

This may be applied to the animals either by means of a sponge, or what will certainly be found most convenient where there are many animals to treat, by means of a force-pump and spray-nozzle.

Prof. W. B. Alwood has found that the stock emulsion diluted ten times and mixed with one part of a water extract of tobacco waste (made by steeping one pound of tobacco stems in one gallon of hot water for an hour or more), gave almost perfect immunity for a period of three days, and that two treatments per week almost entirely relieved his cattle from annoyance. He makes the application with a knapsack pump fitted with a cyclone nozzle, and the work is done just after milking time. His method is as follows : The animals are driven into an enclosure through a gate which will only admit one at a time. A man with a knapsack pump on his back stands at the gate and sprays one side of each animal as it passes ; they are then driven out again, and the other side is treated in the same manner. The quantity of liquid thus applied is very small, but has been found sufficient. We have tried this plan at Ottawa and found it to answer admirably. Many people, however, do not know what a valuable instrument a spraying pump with a good nozzle is to have on a farm, and they will consider it an unnecessary expense to obtain one. To these I would earnestly recommend the simple remedy of applying carbolized oil, or oil and sulphur, or the old remedy of lard and sulphur, which will keep off the flies and save their animals a great deal of pain and worry, and increase their own profits. With regard to a spraying pump I may point out that there is hardly a crop grown for the protection of which from its insect enemies such an implement

may not be advantageously used. There is no crop grown which has not many parasitic insect and fungous enemies. It needs very little observation on the part of practical agriculturists to see how great this loss is; but, strange to say, few of them seem to grasp the fact that these losses can be to a large measure prevented by simple and easily applied remedies. These, it was stated, were the studies upon which the speaker was particularly engaged, and he wished to draw the attention of those present to a fact which some of them might not have thought of—that he was their servant, that the work was being done for them, and that, as they were paying for it, it was not business-like for them not to see to it that he did his duty. He hoped in the future that he might have many applications for assistance and information about the many injurious insects which would undoubtedly be a cause of loss to the farmers of Eastern Ontario, as well as of every other part of the Dominion. He would not promise in all cases to remedy or prevent entirely the loss, but at any rate he would do his best.

The meeting then adjourned till 2 o'clock.

SECOND DAY—AFTERNOON SESSION.

The hall was well filled when the chairman opened the proceedings by complimenting the farmers of the district for turning out in such large numbers.

CHEAPENING THE COST OF THE PRODUCTION OF MILK.

Mr. John Gould, of Aurora Station, Ohio, was introduced as a leading dairyman from the United States, whose wise and witty words carried much weight on both sides of the international line. He said: I am glad to be with you, ladies and gentlemen, and for fear I should not get here in time I "sat up all night," and started for here at four o'clock this morning. I do not feel that I am in a strange or hostile land. Your interests are our interests; what affects your welfare will also touch ours. Instead of being enemies, both of our great countries have to stand shoulder to shoulder in the advancement of the dairy industry and of agriculture generally. We need to stand close together in order to get and keep the trade about us. I suppose you have hard times over here, just as we have on our side of the line, and perhaps some of you will lay it to the charge of the Government. Well, our President does go duck-hunting at critical times, (laughter), but there are other factors besides the political administration entering into the state of the butter and cheese business.

The cheapening of the cost of producing milk is one of the most important problems we as dairymen are called upon to solve. Unless we are able to reduce the cost of our milk supply, we who are in the business of caring for cows will have to admit that the Australian and Danish dairymen are better at this occupation than we are, and we are not yet going to put that admission on record. We can cheapen the cost of milk production only by having a cow better adapted to the dairy than the average animal now kept; by having a more suitable place in which to stable her, and by feeding her more cheaply, with more succulent and nutritious feed than now usually falls to her lot, especially during the fall, winter and spring months. I did some prophesying last winter, and it didn't come true. (Laughter). I predicted that the hard times had about passed over, and that we were going to have brighter skies. But this winter we are selling our milk at 90 cents instead of $1.10, and glad to get a fifty cent silver dollar for it. (Laughter). But the getting of more milk for the value of food given to the animal must be preceded by an education which will enable us to know what we want. We have been too willing, as a class, to get along with a cheap education. I was once one of those who thought all that was necessary was to know which end of the cow to sit by to milk. (Laughter). We must be educated to understand the cow. We must know something

more than that she has a leg at each corner. We must be taught to understand her, and to comprehend her needs and her capabilities. In the past we never properly studied the individualism of the cow, or treated her from this important standpoint. We never stopped to enquire why one cow gave more milk or richer milk than another. We have been feeding our dairy animals too indiscriminately. We fed a cow without properly considering what the animal really needed. It was: "Here is a cow and there is a hay stack; let her live through the winter if she can." And then we would go around in the spring enquiring the price of cow hides. (Great laughter). We must learn at the very first that in order to be successful we must understand our business just as well as any man who is a manufacturer understands his. We, too, are manufacturers, and the cows and the grasses and the grains are the things we are handling in our manufacturing, for through the medium of the cow the plant product of the earth is turned into an article called milk, which is in itself a finished article, although it may be further made up into such more finished articles as butter and cheese.

It is easier for us to eat ten pounds of butter than to eat 500 pounds of corn stalks. (Laughter). And that is manufacturing, pure and simple. We simply ask a cow to take 500 pounds of grass or corn stalks into her system, and concentrate it into pats of butter. We farmers must understand more than ever before what the things growing in the soil are composed of; we must understand how to produce and store away these plants in the best way, and then how to turn our product of milk into the finest goods. We must study the capacity of this living, breathing machine that we call a cow, and her adaptation of turning the food we have given her into milk, butter or cheese. In short, we must have a machine to do our work that can do it better than the old machine did. The old brindle cow was too common in the past as a milker. Who her father, or grandfather or aunt was, nobody knew or seemed to care. But the requirements of the dairy business of to-day cannot be met by the old brindle cow. I live very near the Benwood Nail Works, which turn out a car load of nails every ten hours. A few years ago nails were made by hand, and one man was able in ten hours to make a keg of sixpenny nails. Every man had a furnace to himself, and that meant a long row of them, and the nails cost us eight cents a pound. But somebody found out that a bit of steel wire run through a small machine and fed into a knuckle would enable a finished nail to be cut off at every turn, thus making six nails while you can count one. The machines do not cost over $500, and one boy can attend to six of them. The man who was making nails at six or eight cents a pound cannot compete with the maker of nails at one-fourth of a cent a pound. It is computed that $10,000,000 of capital was invested in old nail furnaces, and these have had to be thrown into the scrap iron pile, while a boy now works six modern nail-making machines. And what is the lesson in this for us? Are we farmers working with old methods or with the new? We regret that we cannot get to the front, but it is not unlikely that our progress is slow because we are so loaded down with old methods and miserable baggage that we can hardly travel onward. Let us try if we cannot get five of these bovine machines to do the work of ten in the dairy.

And this brings us to the dairy cow. What does this animal do? I have just made a tour of northern New York, and I found that in that section the average cow was putting only about 3,600 pounds of milk a year into the creamery. It costs the dairyman about $36 to make that milk, so you will see that the profit is really on the wrong side. The cow must be trained to give more milk. She must not be like the little Jew who swallowed a five dollar gold piece, and all the doctors could get out of him with a stomach pump was three dollars and sixty-five cents. (Laughter). We must have a cow that will give her milk in a generous fashion in response to generous feeding. I believe that in a short time, by judicious selection and feeding, you can get cows to yield not 3,600 but twice that quantity, thus saving nearly half the feed. We must cull out all poor and unpromising animals and breed better ones. That means a good deal. It means also that the farmer will have to do his own milking and not get his wife to do it. (Laughter and applause). We must study more closely the individualism of the cow. It does not matter so much what is the breed of the cow; a good dairy is the result of the selection of the best and the rejection of the poorest milkers. We say that "Like begets like," and that if we have good cows we will have good calves. You say, "look at the

trotting horses." Well, how many of them can trot a mile in 2.20? Only a few horses can do that, and the rest are no good for anything. The point is, that breed as we will there must be close selection. The breed of cow that I am in favor of is the cow that will put plenty of rich milk into the pail. If your cows can do that, no matter what the breed, you have a select dairy. We must have cows adapted to do the work we require of them. What do we expect the cows to give us? And in answering this we have to put dairying into three divisions: Do I want to make butter? Do I wish to make cheese? Or do I desire to send my milk to the city? In the city of Cleveland alone 2,700 cans of milk, and eighty-five pounds of milk to the can, are daily taken in from the surrounding country. But in the majority of cases we need to concern ourselves chiefly with the cow adapted to the creamery or for home butter-making, or the animal best suited to the requirements of the cheese factory. Now a good butter cow is a good cheese cow, and a good cheese cow is a good butter cow. That may seem not to harmonize with the view of some of you. But just here the question arises: Shall I keep a cow that gives me 12,000 pounds of thin milk or one that yields 7,000 pounds of four and one-half per cent. milk, and not have the pleasure of milking tons of water extra in the year. (Laughter). It seems to me that the cow we want most of all is the one that will put four or five per cent. of solids into the milk, even if she does not make the milk pail look like a wash tub. (Laughter). Some say, "Why can't you give us a cross of good rich milkers with a large flow?" Did you ever see a good cross of a Percheron and a trotter? If a man prefers a Holstein cow let him keep her, but he should put her to the test for richness as well as for yield. If he milks Ayrshires, let him also put them to the test. If you have a Jersey dairy, put them to the test for both yield and richness. It is for you to judge whether it is best to select from your own herd or from that of your neighbors. With us the southern part of Ohio is a recruiting ground for those in the north, so far as dairy cattle are concerned, and we buy largely mature cows. The other day I picked out a cow in a drove and paid thirty dollars for her. In sixty days she gave me sixty times forty-five pounds of milk, which sold for just what she was worth. The farmer who sold this cow must have been asleep. When these fellows know what those cows are worth, then we will have to raise our own cows.

In successful dairying much depends upon the character of the food we give to cows. A few years ago anything that they would eat was fed to cows. What that food was composed of never troubled the owner of the animals. But students of agricultural chemistry say that foods are of two great classes, namely, carbohydrates and albuminous matter. The corn plant, which is full of starch, is of the former class, while most of the meals are of the latter, or the albuminoids. The carbohydrates furnish the fuel for the dairy machine, while the albuminoids make muscle and flesh. Every time you feed your dairy machine, therefore, you must remember that about four parts should go to provide fuel, and one part to repair the waste of flesh, muscle, etc. This, then, makes it an important question as to how we shall get that four parts of fuel as cheap as possible. In the summer time your cow eats in the pasture and gets her own fuel. "Ah, sir," says some one, "you are mistaken in the idea that a cow needs any fuel in the summer. It is all fol-de-rol." "Well, a dead cow is a pretty cold cow, isn't she?" (Laughter and applause.) We must study more particularly how to feed our cows in winter and in spring. We have late springs over in Ohio. Sometimes winter is not content to linger in the lap of spring, but wants to sit awhile in the lap of summer. But someone else asks me, "Why don't you feed your cow with hay?" Well, how much fuel do you get off an acre of hay? How many men got four tons of hay to the acre off their pasture? Not one. How many got three tons? Not one. How many two tons? Very few of you. Well you all cut a ton, because everyone of you told the assessor that you did. (Laughter.) And what do you get out of a ton of such fuel for your cow? If you take a ton of timothy hay and get all the water out of it, and strike out the fibre, which means so much dead material, you will find that the ton of hay has shrunk to less than 1,200 pounds of fuel to burn in our cow's furnace in order to get her warm. Is there any cheaper way of getting that fuel? If from off an acre of silage corn you can husk eighty baskets, besides getting 5,000 pounds of edible, succulent corn food matter, that means about 8,000, as against 1,200 pounds of hay. The hay will feed a cow for three

months, while the corn crop, if well saved, will keep her going for almost two years. You want to get this big fuel crop, and save it in the best possible way. If you believe you can save it best in the silo, I think you are right. If you think you can save it best in shooks, do so; it is better than not doing anything in the corn line. But what is usually done with corn? We throw the best part of the crop into the field, allowing the cattle to take what they like of it, littering the field, and hurting our religion, when, in the spring, we have to gather it up as refuse. (Laughter.) We throw a lot of corn away, simply because it is a little bother to preserve it. A little bother! My friends, is it not a little bother to take our grain to the mill, and have it ground into meal? Why, nothing useful and helpful and saving is done in this world without a little trouble. Now, if, instead of throwing that corn over into the field to the cows and wasting much of that valuable food, it is cut into one-half inch pieces, we not only save nearly all of it, but we save ourselves a lot of work in the end. It means also that we will realize within ten per cent. of that 8,000 pounds of food, or fuel, instead of wasting it; and that is much better than using 1,200 pounds of hay. Out our way we have our choice of using Palmyra or Salineville coal. In Palmyra coal we find about 125 or 150 pounds of cinders and ash, while in the Salineville coal we get fully 600 pounds of clinkers and ash. You would not expect me to pay as much for Salineville coal as for the Palmyra? And yet people do not think it worth while to examine into the quality or price of the fuel they provide their dairy machines with. In the past we have been buying nitrogen at a high figure, not knowing that we had plenty of nitrogen on our farms, or that we could easily place it there. Let us grow certain crops like peas, beans and clover, which are rich in nitrogen, and thus get into the soil this nitrogen which it so badly needs. We want more clover hay, and we can easily exchange our oats for mill feed, and thus we can get this one part to make blood and bone and sinew, giving us, with the four parts of fuel, a perfect feed. Cows want succulence in this fuel food, and as corn fodder is dry we want something else to put with it. I have been working for some time to get some good supplementary crop from October to November until we get our cows on their winter ration. We have tried meal and all kinds of food, until now, in the last week of August, we grow peas and oats, and we use it with advantage late in the fall as a supplementary crop. Peas and corn-stalks make a magnificent sustaining ration. Let us feed our machine with the proper fuel. Some persons will give a dairy cow four pounds extra of Indian meal, but such a ration as that has a tendency to put more fire into her system and dry her up. Instead of putting such heating fuel into a cow you need to give her a class of food that will build up her bone and muscle. The man who will succeed in dairying in the future is the man who will give his cow the food best calculated for milk production. Why do you want to load up a cow with food for her self-protection in winter, when it is cheaper, more humane and wiser to protect her with good boards lined with tarred paper, and having windows in that stable to let in the sunlight? Nature has got tired of our treatment of her, and for that reason it is harder to get from her what we used to in the way of the old time crops. She put her treasure on the top of the soil, and we went with our great baskets and took it off, but put back little or nothing in return. And now nature has locked up her treasure, so to speak. Before we went to the box wherein it was contained, and with a crank, key or nail we opened that box easily and robbed her of her treasure. Now she has fastened her wealth with a combination lock; it is once to the right, once to the left, to the right again, and the dropping of the bolt can be heard. Let us carefully study that combination. It appears to me that the three great readings in the dairy combination lock is a good cow, a good crop, and good care for both.

ADDRESS BY THE MINISTER OF AGRICULTURE.

Hon. JOHN DRYDEN, Minister of Agriculture for Ontario, was then introduced, and was received with enthusiam. He said: I desire at the very first to congratulate all present upon this magnificent meeting. As I look into the faces of those before me I can see that nearly all of you come from the farm. You have come to hear, and to be instructed

by the various speakers who are announced to address you. I never did believe very much in cheap literature, and I know that people generally do not appreciate it. I remember that when we went to the farmers' institutes a few years ago the officers would sometimes bring a few bulletins with them which they had saved up for a year or so, and say: "Here's something that I have brought; I don't know what it is for sure, but you can take it if you like." Now these bulletins were neither cheap nor worthless, but hardly anyone took them. Everyone seemed to accept the valuation thus given them. On the same principle I do not wish to intrude myself upon you, because my remarks must at best be of a general character and are only thrown in as an extra, my name not appearing on the programme at this stage. I know you will prefer to hear those who are here at considerable expense and will speak on specified subjects of great interest, while my remarks may be considered too cheap to carry away.

I am here to bring greetings from the Government of which I have the honor to be a representative. The Ontario Administration wishes you every success, and are delighted with the use you have made of the money granted to you in the years past, and which has been expended in such a way by you as to accomplish so much for the good of the country. You will not misunderstand me when I say that this Dairymen's Association is one of the great educational institutions of the Province. (Applause.) Any of you who have heard me speak on any former occasion know very well my views as to what education is. I believe in education. I believe in practical education. If I did not, I would not have consented to an increase of the grant to this Association as I have since I took office. I believe that these dairy associations are in the highest sense educative. I know that they are not going to teach these young men and women how to read and write and spell. But something will be taught them through this instrumentality that is of equal benefit and importance. I am delighted to observe that this large assemblage of intelligent farmers have gathered here willing to learn from the experience of others, and that is of itself a hopeful sign. One difficulty we have had to contend with in previous years was that too many farmers thought they knew it all and needed no instruction. It is encouraging therefore when you find progressive farmers declaring by their presence at such a gathering that they are open to learn things new about their calling, and have come here to receive instruction from John Gould and other practical teachers in agriculture. I know something of Mr. Gould, and can tell you that he has carved out his fortune bravely and wisely, and that he is sound through and through. Up at Woodstock yesterday, at the Western Dairymen's Association meeting, I met another man, Mr. Theodore Louis, a self-made man who has carved out his fortune in the great State of Wisconsin, much further west than Ohio. That grand old man is doing what he can now, with love in his heart, to help his fellow agriculturists by his own well-learned lessons of experience and observation.

One thing necessary to our success in farming is unity of action. I love to see farmers coming together for mutual counsel and help. I admit that I do do not think we have any particular necessity for a third political party, but I am willing to hail almost anything that will bring the farmers of this country nearer together. If a farmer comes here selfishly saying, "I am going to get all the good I can from this gathering; I will try and learn how to handle my milk better in order to make better butter and cheese, so as to do better than my neighbor and get ahead of him in that way"—that man is on the wrong track. You will be the gainer if you will help your neighbor to improve also. (Applause) A lady who attended the travelling dairy once took me to task for teaching her neighbors to make as good butter as she did. I said, "You forget that the woman who is making poor butter is making just as many pounds as she will when it is a better quality, and when she sells the poorer quality and it goes to the home of the banker or merchant the children taste it and don't care to eat it, and the result is that it does them for days and days. Now, if we can teach her to make as good butter as you do the children will eat the purchase in a short time, and the mother will have to say, 'Why, children, you are eating too much of that butter.' And so many more pounds will be consumed—more than your neighbor can supply—and hence your market will be better, not worse." The dairymen have set an example to all the Province. They work together unitedly in forwarding this grand cheese industry. But it is not

enough to have *unity*. We must also have *purpose*. Just as soon as a man decides to make first-class cheese or butter he has a purpose before him. But before he comes to his work he must know how to carry his purpose into effect. In other words, the man must have an IDEAL before him. It is not enough for one to say, "I am going to commence dairying," and send someone without instruction to buy his cows. He must know what kind of cow he wants himself, or otherwise he will not succeed. You must have a proper ideal before you. Such gatherings as these help you to form a right ideal. If you like, you may put Mr. Gould or the dairy instructors under a cross-examination, and in that way have your ideals tested and developed along proper lines. We must also work with determination. If you want me to show you a body of men with a determined purpose I will point to the farmers of Ontario. To-day we are working under disadvantages. We are beset with various difficulties, and ordinary men would often feel like quitting altogether. In, fact, sometimes men come to me and say, "I cannot stand this any longer." But some of these men have gone bravely and wisely again to their work and have succeeded. We must put British pluck into our business. Yet we cannot succeed without knowledge. Do not run away with the idea that you have it all in your head, for you have not. I have been farming for thirty years, and yet I expect to learn something valuable from every meeting I attend of a like nature to this. I am open to learn as long as I live. You cannot succeed in agriculture without the proper knowledge. The Legislature of the Province gives money to these various agricultural associations and other institutions in order that you may be provided with helpful information. But how often it grieves me to think that while this valuable information comes through the post office to almost every man's door, there are some farmers who say, "I don't want to read this stuff." They really do not want to learn. I am desirous that all this valuable information should be used to the best advantage. We have in Canada a great country. It is great in extent. It is great in resources. Its possibilities in agriculture have never yet been stated. Sometimes I have been laughed at for starting the Pioneer Dairy Farm away up in Algoma, where it is supposed fertile lands are not found, but twenty years from now you will be astonished to see the development of that splendid district. Not only are we great in extent, and great in resources, but we are also great in *men*. I doubt if our neighbor, Mr. Gould, can show as fine a lot of men and women at a similar gathering on his side of the line (Applause and laughter.) But if this country is ever to become what it ought to be it will be largely because the farmers have taken advantage of the educational facilities that we are striving to bring within their easy reach. Political upheavals will not make this country great. But Canada can be made great by the energy, industry and honesty of her people. And in this good and grand work your Association is doing a noble part. I urge you to go forward in your endeavor to advance the great industry you here represent, and so long as I occupy the position I now do I shall be willing, both in the House and out of it, to give you a helping hand. I wish to stir your enthusiasm in these depressing days, when farmers generally get so little return for their labor. We must cheapen production, and endeavor to make our farm products BETTER than ever before. There is a great future for this country. We are only on the fringe of our possibilities. Already we occupy the highest position in dairying of any country in the world. We must keep that position, and advance still further in the van. When you think you have lack of information on any point touching agricultural practice write to the men who are paid by the Government to deal with these questions. Fight this battle of intelligent industry with energy, and I have no fear of the result. Grasp each other's hands; what one knows the other should and will know, and this mutual aid will mean general prosperity. By thus coming together, and each assisting the other forward in the road to successful dairying, you will lay the foundation for a success in the future that will eclipse even the magnificent record of the past. (Applause.)

HOG RAISING.

Prof. J. W. Robertson, Commissioner of Dairying and Agriculture for the Dominion, was introduced by the President saying that the Professor's name was known to every dairyman, and said: I have to speak upon what some may consider a most uninviting theme. I am asked to talk about raising hogs. I wish to see justice done to the animal. The hog deserves more credit than he generally receives. I consider him a good citizen. The politics in his dominion, as in our own, are sometimes of a disturbing nature (laughter), and for want of proper management he may not give a proper return for his keep. He cannot create; but he can change what he consumes into valuable product or waste it. He can take a lot of swill and turn it into luscious bacon. He can also turn the best of food, like the finest of wheat and corn, and meal and milk, into nothing but cussedness and squeal. The hog needs to have his education looked after. He has not been carefully educated if he does not show by his behaviour that he lives to do things for other people. And that is what's the trouble with many men. Just as soon as a man comes to the conclusion that the education of himself, and of his boys and his girls, is for the purpose of fitting them to aid in the promotion and production of that which is valuable and useful, to be directed in the way of helping others, just so soon does he put himself into proper relationship to his surroundings. I wish to point my despised hog to the nobler kind of behaviour to which he may attain.

I have not an expectation of telling you much in this connection that you cannot learn elsewhere. I do not think it well in a speech to try to pile too much information on an audience. If you take a seed of wheat or kernel of corn, and put it down into the dark soil, where it will remain buried or planted, it will stay there and rot unless the sunshine comes and thrills it with warmth and energy into vibration and life. The sun wakens that kernel of corn almost from death into life, for if the genial influence of the sun does not reach the dormant seed it will die. In this case the sun takes hold of the vitality of the seed and says: "Wake up; do something." Then the little seed begins to do something for itself in earnest, and to roll up power. It has wakened up. The mission of myself, and the other public servants here, is not only to tell you things but to help to wake you up for active growth. The main object of this and similar conventions is to stir people up to do better than before. And so, too, do I want to waken up my hog; and I do not want to do so by turning a dog on him. The hog can add very much to the wealth of the community. On some farms he has paid for the furniture and the books, and has made life pleasant for his owner. You will see by this table that he is of some importance from a trade standpoint:

Countries.	Cattle.	Sheep.	Swine.
	No.	No.	No.
The world	298,873,657	534,348,924	102,172,224
United Kingdom	11,207,554	31,774,824	3,278,000
Canada	4,060,662	2,513,977	1,706,785
Australia	12,632,018	116,153,632	1,626,014
United States	52,378,283	42 273,553	46,094,207

In a country like Canada, where we have less people than we can raise food for, it is a wise thing for the farmers to look around and ask, "Where can I sell my surplus products?" The one country in all the world which buys foods for its people is the United Kingdom, or as we generally call it, England. It is practically the only country which does not provide food enough for its inhabitants. France, Germany and Denmark, Australia, Italy, Spain, Portugal and the Argentine Republic are all competing with each other in supplying the markets of Great Britain. When you read of England being pitifully alone as in case of war it is all nonsense. There is hardly a nation of the earth that is not wearing a white cap as a waiter at the tables of Great Britain.

In looking over the provision bill of England for the year, 1894, as shown in the following table, you will see that she is a generous buyer :

IMPORTED BY GREAT BRITAIN.

Animals, living, for food	$ 44,237,455
Dressed meat	110,594,951
Butter	65,449,268
Margarine	14,818,075
Cheese	26,644,708
Lard	13,424,292
Milk	5,252,277

Oleomargarine is sailing under false colors, and is an undersirable thing to put upon the food market. Our export of cheese to Great Britain was 53 per cent. of what she took from all countries, while the home product of Great Britain is as eight pounds to five and a half pounds of what she imports from all countries. In 1895 the British home production was rather small, and that will likely put the cheese market for 1896 in a better condition for us. In 1894 the domestic production of Great Britain was the largest on record. We have been sending more than half the imports of cheese of England, and it has been a good thing for us. We ought to be able not only to retain or increase our lead in cheese, but also to send a good share of dressed meats, such as beef, mutton, bacon and hams. It is worth while considering whether you cannot turn your Indian corn fodder and ensilage into something else besides milk and cheese, even while you still make plenty of first-class cheese and butter.

A glance again at the first table given will be interesting. In the last seven years Australian cattle have increased by three and a half millions, while ours altogether are about four millions. There are about a hundred million hogs in the world. If we can get a better method of raising, feeding and finishing our hogs, and they are cured in a way acceptable to the British market, we can increase the number without lowering the price or the profit. Too many farmers raise their hogs to sell in October and November. Now, if we had a plan of selling our hogs in July, August and September we could keep up the price while increasing the number. But it is useless to attempt to increase the number of hogs unless you have some fixed and practical plan for feeding them. I do not think it is well for a man to keep more than one hog for each acre under cultivation —for instance, forty hogs on forty acres in addition to cattle and sheep. The hog is a capital scavenger, and will eat up much that would otherwise go to waste. Hogs will pick up waste matter here and there. Sometimes this cleaning up will mean $1 or $1.50 an acre, and this practically means the rent. Hogs can be increased very rapidly. One sow will give you eight young pigs in a year, even without two litters. And half of these might be saved for breeding. That will give you four sows to breed from. In ten years' time the family from that one sow would be several millions. You can easily arrange to have hogs for sale both summer and winter. Have as many as possible to dispose of in summer, and sell the rest when you can.

I now direct your attention to a table showing the imports of swine and their products into Great Britain during 1894 :

From	Swine	Pork.		Bacon and Ham.	Lard.
		Fresh.	Salt.		
	No.	cwt.	cwt.	cwt.	cwt.
Canada	....	.....	7,702	305,019	18,604
United States	.....	4,339	150,186	3,636,473	1,304,638
Denmark	....	2,015	61,360	768,613	.....
Holland	.....	133,526	1,935	3,666	309
Other countries	8	40,503	3,836	85,617	2,855
Total	8	180,383	225,019	4,819,388	1,400,406

We see that Great Britain imports nearly five millions of hundredweights of bacon and ham, and but a very small share—about one-sixteenth of it—goes from Canada. In fact, three-fourths of the British imports of this class of meat goes from the United States, which sends twelve times as much bacon and ham to the Motherland as we do. During the past twenty years the Danes have accomplished much. They have striven to have their cows calve in October, and while they have not been altogether successful in this, by the use of skim-milk, available every month of the year, they have largely increased their exports of bacon.

A MEMBER: What breed of hog do you recommend?

Prof. ROBERTSON: Theodore Louis was asked that identical question, the other day, at Woodstock, and the old gentleman, after appearing to ruminate for a while, shrewdly said, "I would recommend the hog that will give you the largest return for the food you give it." (Laughter and applause.) A quality of mild, lean bacon is preferred. A few years ago, when there was a big demand for bacon in the lumber camps, a side of bacon that had a thick back of fat would fetch the most money. Now the people of England will pay the best price for a side of bacon where the fat does not exceed two inches or so in thickness. The old "razor-back" was made fun of in the past, and often undeservedly. If you can get a good cross between a broad-back and a shelving-back hog you will get pigs that will give you the best return if you raise them for bacon and ham Much depends upon the form and shape of an animal as to whether it is valuable or not as a bacon hog. The Tamworths, Yorkshires and Chester Whites have thinner backs and longer sides than the Suffolks and Berkshires. We get the best returns in quality and weight from crosses between the Berkshire and one of the first three breeds named, or grades of the same. If Berkshires are fed long they get a little too much lard on the back, and therefore a dash of blood of some thinner backed variety improves the breed from a bacon standpoint.

A man can make a hog gain more weight on the same food in June, July or August than he can in October, November or December. Therefore every pound of increase costs him less and adds to his profits. You see, it takes more food in winter to maintain the animal in the way of supporting the body. For two years we kept and experimented with Berkshires, Yorkshires, Tamworths, Essex and Poland Chinas. We had these breeds crossed in every possible way. These cross-bred pigs were given the same food, and there was no constant superiority of any particular breed or cross. None of these pure breds or cross-breds ate appreciably more than the others for the 100 pounds of increase in weight, except perhaps the Yorkshires. The Berkshire crosses gave us as good returns as any. But in sows, as in cows, there is far more difference between animals within the breed, than between the breeds as such for making profits. It pays a man to pay a double price for a sow that is long and lusty, and looks as if she could run a long distance without getting out of breath.

Shelter for swine is needed in cold weather. If there is one thing harder for a pig to endure than another it is a draught. I believe a pig can withstand still cold as well as any other of the domestic animals, but it cannot stand a draught. If a cold wind blows across a hog for two hours, I think the animal will be much the worse for it. It is almost sure to give it constipation, and that is one of the most dangerous ailments that afflict hogs. Give your swine a warm and dry sleeping place, with freedom from draughts. The hog needs exercise, which has the effect of making the body quiver with life. That is entirely different from leaving the body to shiver with cold. If the body of an animal is not exuberant with life, the animal will not take as much nourishment, or will not use it economically. The man who leads an active life, with due exercise, has three chances to one of living longer than a man of the opposite habits. But the pig must be given exercise wisely. The pig should not be allowed to have so much exercise as to waste the food given it; but I would have it so placed that it would be able to take enough exercise to develop strength and maintain health. A notion has got abroad that a breeding sow should be kept thin and half starved. That is a fallacy. There is no time in the life of a sow when she requires good food more than when she is carrying and nourishing her litter. We keep our breeding sows in a good condition of flesh, and we

have lost very few young pigs in five years. We keep them in yards where they can get plenty of exercise.

Sometimes a sow will eat her young. There are two reasons for this. It is either because she is very uncomfortable or because she is badly nourished. Perhaps she has not been given any ashes or earth to eat. In that case, if you will examine her tongue you will find that it is white, and looks as if she had dyspepsia. If a sow has dyspepsia from being badly fed she is cross and discontented, and will grab at anything to alleviate that feeling, and so she will bite and devour her young, and thus get a taste for blood. Throw the breeding sow an earthen sod a day. It will be an excellent tonic for her, and she will grow more contented and comfortable. There is also the instinct of motherhood. This is the most masterful instinct that we know of. If a sow can but hear her young squeal, she will face and chase a man with a pitchfork in defence of her offspring. A man comes into where the sow is lying with her new litter and tries to remove some of her young, when they begin to squeal. The mother will seize the man's hand, or a young pig or anything else in order, as doubtless she thinks, to preserve her family from injury. Let the sow get used to your appearance, to your clothes, to your voice, and if you are kind and helpful you can soon get where you like and do what you like without causing any trouble.

Wean the pigs in a sensible way. The common way is to allow the pigs to suckle with the mother until they are six weeks old, when they are suddenly weaned, and one or two little pigs are left to keep the sow's udder from sudden drying. This has a tendency to stunt the pigs taken away, and once stunted they cannot regain their proper growth. Get a little trough, and let the young pigs learn to eat with their mothers—eating and suckling, eating and suckling for several weeks—in this way they will never get stunted, nor will they get pot-bellied. It pays to give some skim milk or buttermilk to young pigs until they grow to 150 pounds in weight, even if it is only a couple of pints a day.

In putting up premises for pigs, it pays to have the floors so arranged that the animals will not lie in the wet. If you have a feeding trough where the floor of the pen slants from the trough, the pigs will be wet; but if the floor slants towards the trough the water will run that way into the gutter, and the pigs will have a healthy, dry bed.

We have been conducting experiments as to the relative value of steamed and warmed feed and cold and raw feed. The pigs fed on steamed and warm grain have grown faster, but when we made up the cost, per pound of increase, there was no appreciable difference. In feeding ground grain and unground grain I found that the pigs consumed ten per cent. more of the unground grain, and ten per cent. will pay for the grinding, while the pigs fed on the ground grain will have stronger legs and better health, and will consequently do better. We feed all our meal soaked for an average period of thirty hours.

In feeding skim-milk to fattening hogs, it pays to feed a small quantity only per day. From four to five pounds per head per day is a more economical allowance than fifteen or twenty pounds.

In feeding whey, there are several things to be noticed. Whey is a very poor diet to feed alone to a hog, unless the animal weighs about 150 or 160 pounds. Whey may be turned to lard on a full-grown hog, but it should never be fed alone to young ones. The best thing to feed with whey is clover—either clover hay or clover pasture. The man who will feed clover will be surprised at the number of hogs he can fatten in the summer. Two acres of clover make a most valuable adjunct to a good supply of whey. If you pasture your hogs on clover, and use that field for a crop of Indian corn, you may count on five tons of corn per acre more than an ordinary crop.

My idea is not to advise you to become specialists in hog-breeding, but to suggest some things to enable you to make the most of your general crops, to make the most of your clover, of your corn, of your whey and of your skim-milk.

Feed your whey as clean and sweet as possible. Regardless of the flavor of the cheese altogether, every cheese factory manager should insist upon the maker carefully

cleaning the whey tank once a week for the sake of the hogs. (Applause.) It means wholesomeness. The whey tank should be above ground. The whey might be lifted either by a pump or an ejector. The cheese-maker would thus give his patrons more value in the whey, he would protect himself against bad flavor in his cheese, and he would also keep his factory so sweet and nice that the whole business would be lifted into a higher plane. It is a poor thing for a maker to give advice to his patrons about keeping their milk cans clean when you can smell his factory two miles off. (Laughter and applause.) Theodore Louis said that he found it profitable to give a condiment to his hogs. He recommended four pounds of charcoal made from corn cobs, six pounds of salt, one bushel of wood ashes, thoroughly mixed, and one and a quarter pounds of copperas, dissolved in water, and sprinkled on the mixture as an excellent condiment. He puts the mixture in a self-feeder and allows the hogs to take all they want.

A MEMBER: What about coal ashes?

Prof. ROBERTSON: I would give coal ashes if there was a large portion of charcoal in them. Give the hog a fair chance and he will become a valuable citizen; he will do better with what he is fed, and make you all the richer and happier for it. I have a high opinion of the hog as a leading factor in the agriculture of this fair Province of Ontario. I have been trying to develop the faculty of humor in pigs. Why does a man take offence when he is likened to a hog? A man once told me it was because "It sounded as if a fellow ate too much." But I have never seen a pig eat too much. He may leave some in the trough and waste it. A cow or a horse will eat too much if they get a chance, and perhaps die. But a pig, though it likes to eat, will quit before it injures itself. A pig, however, has no sense of humor, and, therefore, a man likened to a pig, feels that he is regarded as a dull fellow. I find that certain foods will affect the disposition of the hog. I have fed them with food that made but little bone, and it appeared to make them quarrel and nag as if nervous, just like human beings. The pigs seemed unable to look on the funny side of anything, and nagged and grumbled all the time. The sense of humor is the last faculty a man gets, and a pig does not seem to be able to fully acquire it. Where pigs are well fed they may quarrel in a sort of way, but it is more or less good-natured. Feed the hog well, and he will grow more meat as he grows more humor, and is more cheerful and contented. As with the hog, so with the man. If you find a farmer in this part of Ontario using himself so that he makes the most of himself—of his crops, of his cows, of his hogs, of his time, of his body, of his mind—he becomes a man of power, a man of helpfulness. The farmer who will care prudently for his cattle and his hogs will be a successful and contented man. And a land in which the farmers are prosperous and contented is a land worth living in. (Applause.)

The meeting then adjourned, to meet at eight o'clock.

SECOND DAY—EVENING SESSION.

When the chairman, Mr. C. L. OWEN, rose to call the meeting to order, it was impossible for some of those who came to the Music Hall to find standing room.

Mr. OWEN briefly expressed his satisfaction at the splendid attendance, and introduced the first speaker of the evening.

GROWING CORN FOR THE SILO.

Mr. JOHN GOULD, of Ohio, delivered a practical address upon the subject of corn growing for the silo, and was listened to with much interest. A report of this address will be found in the report of the proceedings of the Western Dairymen's Association.

BREAD AND MILK AND BREAD AND BUTTER.

Prof. Robertson, bearing in his hands a loaf of bread, a glass of milk and a bunch of wheat, came forward to deliver the next speech, and was heartily received. He said: I am not going to speak to the farmer as such to-night, but rather to those of the audience who are consumers of the articles that I am expected to talk about. I once heard of a clergyman who was asked "to say grace." There was considerable noise at the table, and the host shouted to the minister, "Mr. Broadcloth, will you please say grace?" "I have said it," said the minister. "Well, I didn't hear you," said the other. "But I was not speaking to you," was the quiet reply. (Laughter.) And so to-night I am not to address you as farmers. I was to talk at another gathering upon "Bread and Butter," and when I sat down to frame some thoughts on that subject, I remembered the old saying that if a boy lets a piece of bread and butter fall it will fall with the buttered side down. The old adage says it does; but it does not. A boy remembers the worst experiences, but forgets the thousands of escapes in the recollections of some one misfortune. Like the old folks, he engraves the tale of his little calamities on tablets like brass, and writes the story of his successes and blessings on water.

I hope to treat this subject to-night in a suggestive way, which will cause you to ask and answer questions for yourselves in practical living hereafter. The kind and quality of the food which is consumed is closely identified with, if not the actual cause of progress or deterioration among a people.

The experimental farms in all branches of their work are maintained mainly to help to bring about the most abundant production of the best food in the world. Sometimes investigations to give information cease at the most important point of all. After conducting careful experiments to discover the most economical methods for supplying plant food in the soil for the sustenance of abundant crops, after testing the effects of the different functions of these crops in rations for live stock, shall it be left to chance and ignorance to determine how the food materials which are produced for the support of the people are to be used by them? Sir Henry Thompson, a noted English physician and authority on the effect of diet, says: "I have come to the conclusion that more than one-half of the disease which embitters the middle and later years of life is due to avoidable errors in diet; and that more mischief in the form of actual disease, of impaired vigor and of shortened life accrues to civilized man in England and throughout Central Europe, from erroneous habits of eating than from the habitual use of alcoholic drink, considerable as I know that evil to be." If a boy be nourished in an unwholesome way in early life during the period when his body is growing, he will be in a far-reaching sense "damaged goods" ever afterwards.

I take "Bread and Butter" to include all the material comforts which one earns through personal effort; and we all know this to be a good bread and butter country. As I said a moment ago, bread and butter has much to do with the progress of a nation. It effects that through the bodies of the people, through the material possessions of the people and through the intellectual and moral power of the people. Before I pass on may I enquire what progress, if any, are we making as a people? We boast of making many changes, but change is not always an evidence of progress. When butter changes, it becomes bad and goes from bad to worse. We have cut down trees, cleared hundreds of miles of land and made the face of the country hideously ugly in many parts where nature had left it gorgeously beautiful with its forest raiment. In many parts our country is not so beautiful to look at as it once was; and I do not think we are making progress wisely by the cutting down of trees for the clearing of land, unless we are prepared to put more serviceable plants in their places. Too much of our land has been cleared for the area which is tilled with intelligence, to produce bread and butter, or, in other words, to find food for the people.

We boast of the enlargement in size and increase in value of our possessions. We occupy more land; we do more labor in primitive agriculture, such as Indian "Ryots," Russian "Moujiks;" and Hungarian peasants can do as well as we. That class of agriculture causes us to be spread out so far, that we are apt to become rather thin as a people.

Then, some people measure our progress by looking into the statistics of blue books, to see how many there are of us. If increase in numbers be a fair way of measuring a country's progress, China is the most progressive country in the world. So far as I know, it has a larger increase of population annually and less emigration than any other land the sun shines on ; that is not necessarily progress, or evidence of progress. It is not "How many are there of you?" but "What are you each good for?" Since these are not fair means of measuring any advancement we may make, what rule shall we apply to a country to determine its progress? How shall we measure it to discover whether it be a land good to live in, and whether it becomes more so from year to year? Let us estimate it by its bread and butter opportunities. There are few people in Canada who live in it, except by choice; so there must be something here more pleasant to the people than can be found elsewhere, to induce them to stay. What is that? I take it mainly to be a chance of making a good living and getting good bread and butter, and abundance of them. I mean by bread and butter all the material things which we want. That is how most of us have measured the land, or we would not be here; we would go elsewhere. Someone says that is a very low standard by which to measure a country's attractions and opportunities. It may not express a very high or noble ideal, but is it not the rule for every-day life, which actuates most people at the present time? I would rather be responsible for the statement than responsible for the standard of measurement. I have no sympathy with the flippant complaint of a few literary, so-called learned people, who say we are going over to an all-surrounding, and all-absorbing materialism. I find many men who are engrossed deeply in advancing the material interests of a country, who, by that means, are reaching up towards an attainment of their ideal of an honest and noble living; and I find others of the super-ultra literary sort, who are reaching out towards material and sordid ends through what are called ideal means. Would not an honest man, with a high ideal of life, rather dig drains, shovel coal, saw wood, break stones, and certainly rather bake bread, make butter and enjoy the luxury of realizing his high ideal of an honest living, giving the world more value in service than he got or took of substance, than follow a genteel calling for the sake of escaping toil and thus become a parasite, getting more than he gave. To be engaged in advancing the material welfare of a country is not sordid, but sublime.

Health, strength and personal efficiency for living are intimately connected with and dependent upon the kind and quality of the food we eat, and the proper nourishment of the body governs the exercise of all the faculties into right directions.

I hold in my hand some bread and milk. What is bread? You can weigh it and measure it. You can feel it and taste it. But where did it come from? A scientist might call this bread "manna," I call it something gotten out of the heavens, out of the unseen, for ninety-eight pounds out of every one hundred came originally from the atmosphere and not from the soil. As Mr. Gould said in his address a little while ago, it is atmosphere and sunshine rolled up together.

In saying a few words about wheat, it is well to know that little things, insignificant in themselves, sustain the life of the world's civilization. It takes between 20,000 and 25,000 grains of wheat to make a two-pound loaf of bread. Grains of wheat may not be much singly, but collectively they are the bread of the nation. 3,500 grains of wheat are swallowed when a boy disposes of his bowl of bread and milk. Wheat may make good flour and good bread and good food, yet if the grains were planted they might not grow. When wheat is four or five years old it is not likely to grow. The story of grains of wheat being held in the hand of an Egyptian mummy for thousands of years and then growing is all legendary Some seeds which have oily skins may retain their reproductive powers for years, but it is not so in the case of wheat. Wheat grains with vitality are more than substance, they are latent life, suspended animation. The vibration of the sun's rays are so inconceivably rapid that they cannot be understood. But what a gentle yet effective power they possess ! I might say to a wheat grain, "Wake up," and I might crush it in the effort to make it obey. But the sunshine says in the sweetest yet strongest way, "Wake up!" and the wheat wakes up and lives—does something. That is sunshine

gentle. Sunshine boisterous is a house on fire. As long as a grain of wheat remains in the granary, perfectly contented, eminently respectable and undisturbed, it enjoys no romance; but as soon as you put it on a field and harrow it, and let the damp soil hold it, and the sun's vibrations thrill it through and through, it feels the aspiration of romance and lives. And so it is with boys who are sent out into the world. I would have a boy believe that everything in the world is possible to him. I do not like a lad whether he be sixteen or sixty, to think that there is no romance in life, no unselfish nobility of life possible for him; for just as soon as he believes that he becomes a selfish and therefore brutish man. But if he steps into the grave of unselfish renunciation for service he may have the romance of growing up into a beautiful useful life like a wheat plant. We do not like dirty jobs, especially if they soil our hands. You may say, "Oh, it is so nice to have soft hands, and wear a white shirt and nice clothes all the time." There is a notion that life is meaner and rougher for having the palms of the hands tough and callous and the backs of them brown. The notion is utterly false. A hard-working boy who soils his hands by honest toil and then washes them, has more to recommend them and him than the lily handed fellow who soils his hands by accepting money for which he practically gives nothing in return. Every part of the wheat plant is useful for the next crop, and failing that for something that is between itself and a higher form of life. There are straw and chaff to provide food for the cow, and thus to enable the boy to get milk for his bread. Man eats the fine part of the plant direct, and the cow or sheep eats the coarse part to elaborate it into finer forms. The sun winds energy into the plant as I wind energy into my watch. The sun rolls its energy into the leaves, and the stalks hold its strength. These are taken by the cow, and they carry the sunshine which has been rolled into them into the cow, the sun lets go inside and warms the cow. The warmth is the sunshine stored up in plants and afterwards liberated. The wheat plant is saying to us, "Go into the sunshine business, it may be that you have capacity and power for giving back sunshine to the world, more helpful and comforting and more easily transferable than I have in my stalk." Bread and butter are sunshine materialized; when eaten it should become sunshine humanized that it may be a blessing to the world; and if the playing out of sunshine into life does not pay you always in cash it will pay you in the richer currency of happiness. One hundred pounds of flour will make 136 pounds of bread; and since bread is such an important factor in the happiness and health of the people, instead of a girl being required to play sixteen pieces on the piano before being engaged, she ought to be able to make good, wholesome, dainty bread before any man should be allowed to seek her in marriage. (Laughter and applause.) Sometimes the bread appears to weigh about two tons after you have eaten it.

Nobody can create anything. The cow can change the form of hay or wheat into milk. The cow can improve or degrade food. Milk contains nearly every material of which we are made, and thus the milk is an almost perfect food. If I put sugar into milk it disappears, it is then in solution. If I put in pepper, however, it stays in its own form, and is in suspension. In the milk there are fat globules which are in suspension. They are so small that they can hardly be seen, but when milk is set they come to the top and form the cream. In a drop of milk there are millions of these fat globules, and these are the things from which butter is made. The more we are able to recover these the more butter we shall be able to make from milk.

The following chart shows the composition of the human body of average weight one hundred and forty-eight pounds:

	Pounds.	Percentages.
Water	90.0	60.9
Albuminoids	26.6	17.8
Fats	23.0	15.5
Carbohydrates	.1	.1
Mineral matter	8.3	5.7
	148.0	100.0

Water is the vehicle used oftenest by nature for the carrying of portions of material from one place to another. The albuminoids, sometimes called "protein," "proteoids," or

"nitrogenous compounds," are those which contain about sixteen per cent. of nitrogen. They get the name "albuminoids" from a typical albuminoid, well known to us as albumen, the main constituent in the white of eggs. Albumen is also a constituent of milk. The albuminoids of foods are the "flesh-formers," and, while they may be consumed to produce heat in the body, their main function is to nourish and repair the muscles, nerves, skin and other parts of the body which contain nitrogen. A living body needs these compounds to form the muscles, nerves, skin and other parts of the body. In performing the functions of life some portions of albuminoids are worn out from the skin, the muscles and nerves, and are carried off in the sewerage system of the body. We must swallow something to replace what is worn off, else we shall wear out. Therefore we must take in our food a sufficient quantity of albuminoids to maintain the albumoids of the body undiminished.

Then, in the human body are fats for heating and for lubrication. While the living body is composed of certain compounds, every living organism must consume fuel to maintain the warmth or heat.

Composition of Nutrients, in Percentages.

——	Nitrogen.	Carbon.	Oxygen.	Hydrogen.
Albuminoids	16.0	53.0	24.0	7.0
Fats	none	76.5	11.5	12.0
Carbohydrates { starch	none	44.4	49.9	5.7
Carbohydrates { sugar	none	42.0	51.0	7.0

The albuminoids, fats and carbohydrates come from four elements or sources. Albuminoids only of the three contain nitrogen. Four-fifths of the atmosphere everywhere may be termed nitrogen. The albuminoids contain sixteen per cent. of it, and if we can grow any sort of a plant that will glean it from the atmosphere and make it palatable to cows or other live stock, then we may use the nitrogen from the atmosphere, through the plant first, and the cow or other domestic animal afterwards, for the use of man.

There is almost always such an abundance of mineral matter in the common foods which are consumed, that I may pass over it without further remark.

The uses of food may be stated as :

1. To form the fluids and tissues of the body.
2. To repair waste.
3. To be consumed as fuel.
4. To be stored in the body for future consumption.

The sources of all nutrients, or nourishing ingredients in food are depicted on the following chart :

Sun, Air, Water, Soil } Plant food { Drainage, Cultivation } Seeds, Plants, Animals, { Food, service } Man.

In fact, the production of food and the whole range of agricultural operations are but the conversion of some natural force from one form into another.

The following chart shows the quantities of nutrients which may be obtained per acre :

QUANTITIES OF NUTRIENTS PER ACRE.

——	Albuminoids.	Carbohydrates.	Fats.
	lbs.	lbs.	lbs.
Indian corn (9,000 pounds dry matter)	873	7,371	288
Horse beans (twelve tons, green)	653	1,814	167
Sunflower heads (seven and a half tons)	352	2,373	729
Hay (mixed, two tons)	271	2,888	97
Roots (carrots or mangels, twenty tons)	480	4,320	68

One object sought to be gained by the feeding of cattle is the elaboration of these crude nutrients into finer forms of food fit for human use. An intelligent man buys milch cows and feeds them cornstalks ; the cow eats cornstalks, and he is able to drink cream. The soil, the plants and the animals are all instruments of conversion ; and the objective is an abundance of food and service for mankind.

After providing food for the domestic animals required to elaborate coarse fodders into finer forms, the crops from five acres under a high class of cultivation might sustain five persons in abundance of good food.

The following chart shows the composition of some common foods :

COMPOSITION OF SOME COMMON FOODS, IN PERCENTAGES.

——	Water.	Albuminoids.	Carbohydrates.	Fat.	Ash.
Oatmeal	10.0	15.0	69.0	5.0	1.0
Rice	12.4	7.4	79.4	.4	.4
Pease	15.0	22.9	57.8	1.8	2.5
Beans	15.1	25.5	55.0	1.6	2.8
Pork, fat	10.0	3.0	.....	80.5	6.5
Potatoes	75.5	2.0	21.3	.2	1.0
Beef, rather lean	66.7	23.0	.....	9.0	1.3
Milk	87.0	3.5	5.1	3.7	.7
Wheat bread	32.7	8.9	55 5	1.9	1.0
Butter	12.0	1.0	.5	83.5	3.0
Cheese	35.0	25.8	2.3	34.0	3.7

Of the nature and function of albuminoids I have already spoken. They are known as "flesh-formers" in foods. The carbohydrates and fats of food are termed the "heat-producers." They are the starch, sugar, gums and fibre which are obtained in vegetables, cereals, fruits, etc., and the fat which we obtain in the form of the fat of meat, the butter-fat of milk, or the oils from cereals or other plant sources.

The term "nutritive ratio" is the one used to denote the proportion of albuminoids or flesh-formers in food to the sum of the other nutrients in the food. The heat-producing or fuel value of fat in food is two and a quarter times as great as that of carbohydrates, such as starch and sugar, and also two and a quarter times greater than albuminoids.

That the "flesh-forming" and "heat-producing" parts of our food should be in correct proportion to each other, is important for the health and well-being of the race. In the food of the well-nourished peoples of Europe the proportion is about one of the "flesh-forming" to four or six of the "heat-producing" constituents. In the diet of Americans the ratio is usually from one to six and a half, or from one to eight or nine. If you compare rice with oatmeal you will find that the difference between these has meant a great deal for the race. If a person uses a well-balanced ration, then, barring accident or disease, he will be a well-conditioned, effective individual.

In our experimental work in the feeding of animals, we find that the vigor, healthfulness and apparent contentment of the animals, as well as their profit-yielding capacity, are in a large measure determined by the proportions which these two classes of nutrients bear to each other, as well as to the palatibility and digestibility of the food which is consumed. I think that the same principle might correctly and beneficially be applied for the guidance of people in purchasing and preparing food for themselves.

The proportion of waste in some foods is very great. In beef the inedible or waste portion from bones is from ten to twelve per cent.; in mutton, eighteen per cent.; in eggs, from shell, 14 per cent.; and in chicken, from forty per cent. upwards. Three and a half pounds of potatoes have nourishing material equal to one pound of rice; and there are about equal quantities of nutritive material in one quart of milk, in three-quarters of a pound of beef, and in five ounces of wheat flour or oatmeal. The nourishing value of these three quantities may not be quite equal, as the body is sustained by what is digested, and not by what is swallowed; but, since a quart of milk (costing five cents), three-quarters of a pound of beef (costing ten cents), and five ounces of flour or oatmeal (costing about one cent), contain nearly equal quantities of nutrients, there may be a great deal still to learn on the economical use of foods and the preparation of them in such a way as to make them both palatable and digestible in the largest measure.

I have put on a chart, illustrations by lines of different lengths the food value of twenty-five cents' worth of several common foods. The black lines represent calories, indicating the force value or the fuel value of the food. A calorie is a unit designating the amount of heat which would raise the temperature of a pound of water four degrees Fahr. The number of calories which a man needs to sustaim him at hard labor is about 3,500 per day. In twenty-five cents' worth of beef at fifteen cents per pound the food value is equal to 1,620 calories. The food value of one dozen eggs at fifteen cents per dozen is 1,860 calories. The food value of five quarts of milk at five cents a quart is 4,062 calories. The food value of twenty-five cents' worth of cheese at fifteen cents a pound is 3,455 calories, so that a pound of cheese is the equivalent of about two and one-fourth pounds of the best beef you can buy for food purposes. That is why the Englishman's diet of bread and cheese gives him a well-balanced ration at the very lowest cost. That is the reason, you see why, although the cheese market may temporarily pay a low price for it, a large output of cheese is a safe thing in coming years, because it is a cheap food compared with other foods. Men who have to study economy in buying, buy the foods which they like best and which at the same time contain the largest quantity of nutrient for the price paid for them.

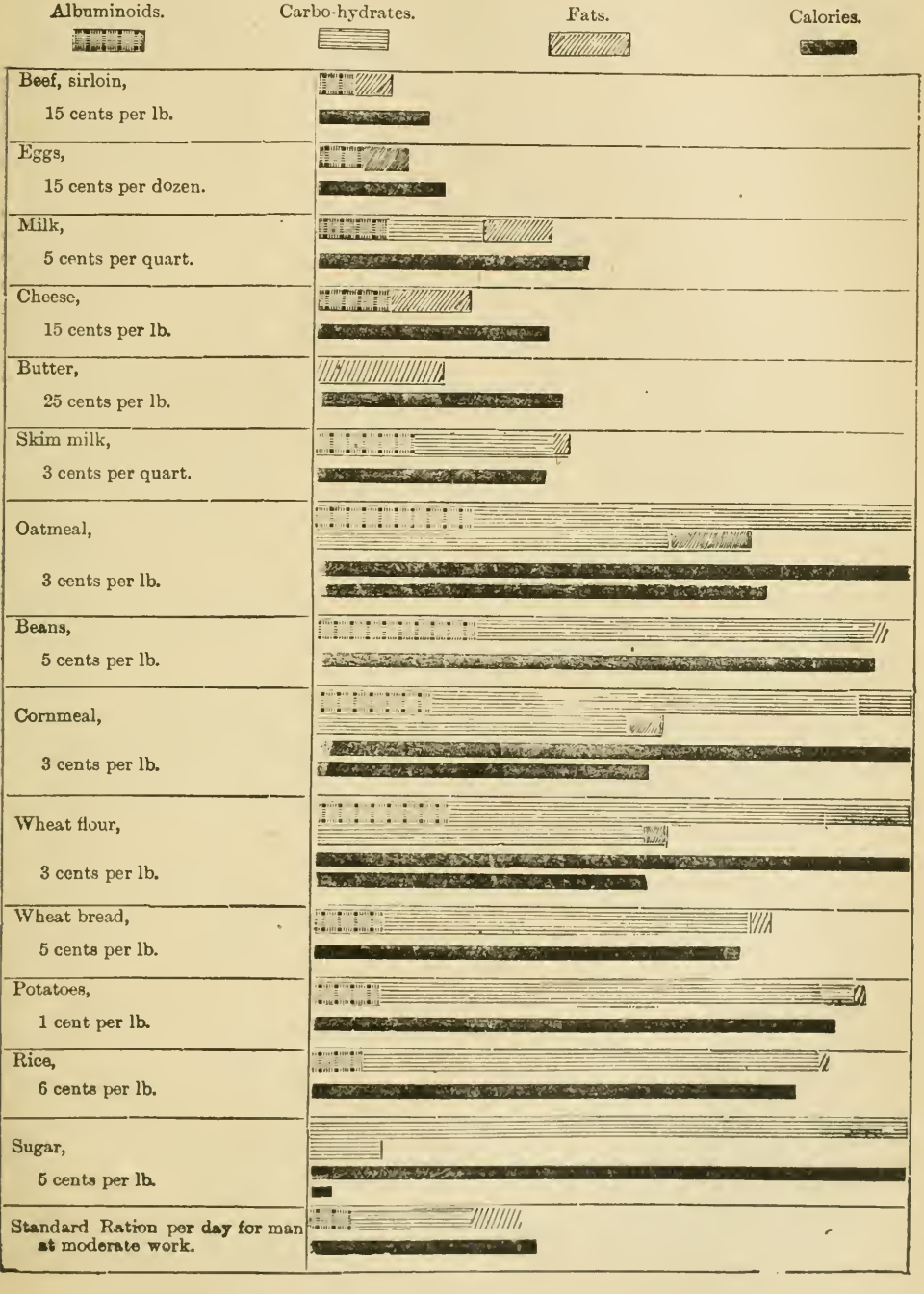
TABLE I.*

Nutritive ingredients contained in twenty-five cents' worth	Albuminoids.	Carbohydrates.	Fat.	Calories.
	lbs.	lbs.	lbs.	
Beef, sirloin, 15 cents per lb	.25	.....	.27	1,620
Eggs, 15 cents per dozen	.34	.....	.29	1,860
Milk, 5 cents per quart	.45	.58	.50	4,062
Cheese, 15 cents per lb	.47	.03	.59	3,455
Butter, 25 cents per lb	.01	.....	.85	3,615
Skim-milk, 3 cents per quart	.72	1.00	.07	3,495
Oatmeal, 3 cents per lb	1.22	5.70	.59	15,370
Beans, 5 cents per lb	1.16	2.96	.10	8,075
Cornmeal, 3 cents per lb	.77	5.88	.32	13,705
Wheat flour, 3 cents per lb	.91	6.24	.09	13,705
Wheat bread, 5 cents per lb	.44	2.82	08	6,400
Potatoes, 1 cent per lb	.45	3.80	.02	8,000
Rice, 6 cents per lb	.31	3.31	.02	6,795
Sugar, 5 cents per lb	.....	4.89	.....	9,100
Standard ration per day for man at moderate work	.28	.90	.30	3,455

*For some of the information in Tables I. and II., I am indebted to Farmers' Bulletin No. 23, by W. O. Atwater, Ph.D., issued by the United States Department of Agriculture, Washington, D.C.

Table II.

Nutritive Ingredients contained in twenty-five cents' worth.



I have observed the diets of some of the people of Canada, who cannot afford to buy extravagantly or carelessly, and I find that one can buy for twenty-five cents considerably more of nourishing food than many of these poor people who do not knew anything about the nutritive value of foods buy for one dollar. In England the skilled laborer who earns $500 per year pays about fifty-one per cent. of his earnings for food. In Germany a similar artisan or laborer pays fifty-five per cent. of his earnings for food, and in Massachusetts men in similar stations in life pay out sixty-three per cent. of their earnings for food.

Woman is and always has been esentially the nourisher of the race. When, through her skill or efforts, the community is well fed, even to its poorer members, it is thus made strong to stand all the strain of our modern life upon it.

Amid the clamor of the new-fangled call for new chances for the New Woman one can still hear the unspoken cry of half-nourished bodies asking for better equipment on the part of the women in the discharge of the duty laid upon them in our form of civilization. This is a much harder class of work to do than those occupations which are termed fashionable and genteel; but, because it is hard to do, it is best worth doing well. It is as much harder to do, as it is harder and nobler to serve well than to shine well; and while the claims of social life, intelleetual activities, financial management, domestic duties and artistic tastes become increasingly great, it is unpardonable that the hand of the nourisher of the people should become careless at that task. When boys and girls are grown in well-nourished bodies, the highest possibility will be realized in passing the torch of life on from generation to generation with a clearer, more kindly, unselfish light and life, exalted a little every time by the hallowed nobility of self-sacrifice and intelligent service. "Whosoever will be great shall be your servant, and whosoever of you will be chiefest shall be servant of all." That is how those silent, strong and constant forces can be made to act for good and not for ill.

In the light of history the advancement of nations is often in inverse ratio to the possession of adventitious resources, and while in Canada there is a very great increase in material wealth and in the availability of means for acquiring it, there is more danger of temptation to let go the ideals of useful nationality.

Under conditions like ours, it is still true that most men and women must labor and should labor. The rich man is no more absolved by his wealth from personal activity and effort than is the poor man by his lack of material embarassments. Wealth stands for accumulated power, and hence a wealthy man with personal endowment, who also can control wealth, is under double obligation to accomplish more in life than a poor man who is responsible for his personal power alone. Simplicity of life makes for nobility in life.

Let us have more plain and wholesome diet for the boys and girls of Canada, and depend upon it that bread and milk will lead not only towards more perfect health, but also toward more beautiful living and more earnest and effective labor. (Applause.)

THE ASSOCIATION THANKED.

Mr. C. L. Owen, of Campbellford, moved a vote of thanks to the Association for selecting the village as the place for holding the Convention.

Mr. Smith seconded the resolution, which was enthusiastically carried.

The President thanked the citizens for their splendid reception.

The Secretary also responded, and spoke in the highest terms of the public spirit of the mover and seconder, and also thanked the business people who had so generously advertised in the pamphlet programme. The village had done itself much credit.

A UNITED PEOPLE.

Hon. JOHN DRYDEN was then called upon and said: The presence of so great an audience as I see before me to-night would in itself be a strong temptation to undertake to make a speech, but notwithstanding this, I shall resist it and not detain you for more than a few moments, as it is now past the hour fixed for the banquet which has already been announced, and I know well that most men do not like to be kept too long from such a feast as is now in anticipation. I must, however, take time to congratulate the citizens of Campbellford upon their willingness, as indicated by their presence here to-night, to give their hearty sympathy to the men and women who are particularly interested in this Association, and whose homes are scattered all over this beautiful country. They are living in comparative isolation from their fellows, and are toiling day by day in the summer's sun and during winter's hoary frost. They are one of the wealth-producing classes of this country and well deserve the earnest sympathy of those living in the villages and towns.

Something has been said already of the unity of our people. I want to emphasize that point, because I do not believe anybody should be allowed to make an effort to separate our people into different classes. While a farmer myself and willing to assert the rights of farmers at all times, yet I am obliged to admit that sometimes I need the physician and sometimes the lawyer, although I do not care to be obliged to use them often. We must also have the blacksmith, the merchant and the tailor, and under such circumstances it is manifest that it is not the best thing for us to separate into classes, or for me to say that because you belong to one calling and I to another, therefore our interests must be opposed to one another, and that we must therefore remain without a common purpose.

The two gentlemen who represented Campbellford on the platform this evening have expressed their pride at being permitted to do something for their own town. I am glad to see them loyal to Campbellford, but such a spirit is too great for any one locality, and I wish to remind them that when they are working thus loyally to build up their own town, they are doing something to build up their own county, their own Province, and the whole Dominion. What I am seeking to do as head of my Department is intended not for one section but for the whole Province and consequently for the whole Dominion. I am a Canadian and therefore do not believe in sectionalism in any class. (Applause). Let me say to my friends, the townspeople of Campbellford, that occasionally you will find one of your farmer friends come to town without wearing his best clothes. Perhaps he will have on a straw hat which you do not think is quite the proper kind to wear upon your streets. May I suggest that you need not cross the street to avoid him on that account. Will you not give him your hand and speak some encouraging word, because underneath this rough clothing there is beating a heart as brave, as strong, as loyal and true as you will find in anyone who walks your streets under the most polished exterior. I have very vivid recollections of an incident that occurred in my own life illustrative of what I now say. A clergyman called at the house about noon, when I had just returned from my work on the farm. The door bell rang, and I went to let him in. For a moment or two he looked at me, looking at my boots, then at my face and then at my dress generally, and after a time he mustered sufficient courage to venture to say, "Well, you don't look much like a member of Parliament." It was not so much what he said that hurt me as how he looked. His looks seemed to say, "That is not the proper dress for a man in your position to wear." I confess to you I did not appreciate it, and why? Simply because I have a strong objection to being judged by the boots I wear. You may judge me for what I am, for what I have done, but do not judge me merely by the clothes I happen at the time to have on, and especially when they are in exact accord with the work I have in hand. Do not then despise these men and women who are doing the rough work in the country. You good people who live in the towns would starve if they did not perform this work. In the name of the farmers of the Province, I extend to the representatives of the town present at the meeting the hand of fellowship. May I say to you that what the country needs is that all her sons, of whatever class, calling or creed, should join hand in hand and heart to heart, having one hope and one ambition to make this our country one of the best of the nations of the world. (Great applause).

THE BANQUET.

The banquet tendered the members of the Association by the citizens of Campbellford was largely attended. The spread was a creditable one. Toasts, speeches and songs were continued until a late hour.

THIRD DAY—MORNING SESSION.

The meeting was called to order at ten o'clock. There was an unusually large attendance for a morning session.

ELECTION OF OFFICERS.

The report of the Nominating Committee was presented by Mr. James Whitton, and was unanimously adopted. The names of the officers elected will be found on page 2.

The PRESIDENT: I must congratulate the Association upon the selection of these officers. They are not strangers to the dairymen of Eastern Ontario. They have served the Association faithfully in the past, and I believe will do even better in the future. I am delighted that you have expressed your confidence in them by the unanimous adoption of the report.

INSECT PESTS.

Mr. FLETCHER then gave a long and instructive address on insect pests, which was listened to with marked attention. The report of a similar address will be found in the proceedings of the Creameries' Association.

POTATO ROT.

In reply to a question Mr. FLETCHER stated that the disease of the potato known as Potato Rot, which caused so much loss to growers of this tuber all over the world, was due to a parasitic fungus known by the name of *Phytophthora infestans*. The life history of this enemy is as follows: The fungus passes the winter inside the tuber and is actually planted with it by the farmer in spring. As soon as the potato begins to grow the parasite also grows with it, and sends up its vegetative system through the tissues of the stems and leaves of its host. About the end of July a mildewy appearance may be seen beneath the leaves. This is really the first formation of the spores, minute bodies analogous with seeds of higher plants. The mildew is the chief source of infestation, for on it are borne enormous numbers of spores which are blown by the wind to adjacent plants upon which they form rust. The rust of potatoes is merely one manifestation produced in summer of the same disease which later in the year causes the rot on the tubers. When a spore is blown onto a potato leaf it causes, first of all, rust which means a diseased spot where a great many more spores are produced, so that one diseased plant in a field may be the cause under favorable conditions of the loss of a whole crop, for the same spores, as stated, when blown or washed onto the foliage produce rust which, if they had fallen to the ground and been washed by the rains down to where the young forming potatoes were, would cause the rot. Potato rot, it was explained, is a distinct disease due to a distinct kind of germs and could not exist unless those germs were first brought into contact with the potato plant. The reason that potato rot was thought to be due to damp weather or to low land was owing to the fact that in such cases the conditions favorable to the development of the disease were given. But it is important for farmers to recognize that the disease is due to a definite germ, for they will then see how it is that the now well known

remedy of spraying with Bordeaux mixture on the foliage is effective. This operation of spraying must be done about the first of August, when the summer spores or mildew appear, and if about three sprayings are applied to the foliage, ten days apart, a far better crop of potatoes will be grown, whatever the weather may be, than if no steps are taken to control the disease. Repeated experiments had shown that spraying the foliage in this way had produced paying results. Full details with regard to the development of the disease and instructions as to the application of the remedy would be found in bulletin No. 23 of the Experimental Farm series, as well as of another disease which is causing much loss to potato growers. This is the Potato Scab, which is also due to a parasitic fungus. The remedy for this is to soak the seed for an hour and a half in a solution of two ounces of corrosive sublimate in sixteen gallons of water. It must be remembered that corrosive sublimate is extremely poisonous, and every care must be taken not to use the vessels again for putting in them any food and to pour away any of the solution which may remain after the potatoes are treated into a hole specially dug for the purpose in some place where no animals can get at it and where it cannot run into any water supply.

POINTERS TO CHEESE-MAKERS.

Prof. DEAN, who was heartily received, after expressing regret that he had been unable to reach the convention on the previous day, as announced, owing to the starting of the Dairy School, and his having to attend the Western Dairymen's convention at Woodstock, proceeded to speak as follows: I shall confine myself in this address to some points brought out in certain experiments in cheese-making that we have been conducting in the Agricultural College at Guelph. Those of which I shall speak deal chiefly with the matters of temperature, rennet, acid and salt—the leading factors in the making of cheese, providing the milk is all right to start with and you have a good cheese-maker.

TEMPERATURE.

How do we find out the temperature of a room, or of milk, or of anything? We do so by means of what is called a thermometer. A thermometer is simply a measurer of heat, and that is exactly what the word means. There are two kinds of thermometers in general use. The one most commonly seen is known as the Fahrenheit. It is graduated from 0 (zero) to 212, or boiling point. The other thermometer is called the Centigrade or Celsius, because it is graduated from 0 to 100, which represent the freezing and boiling points respectively. Now, the point zero or "0" in the Fahrenheit thermometer does not represent the lowest possible degree of cold, as the inventor thought. He mixed salt and ice, and thought he had obtained the greatest degree of cold possible by so doing. That shows that he did not live in Canada. The freezing point is thirty-two degrees above zero in the Fahrenheit thermometer. It is much easier to make calculations with the centigrade than with the Fahrenheit. A thermometer is made something after this manner: A piece of glass tubing is taken, and by means of blowing a bulb is formed in the end. In that bulb a certain amount of alcohol or mercury is placed—generally the latter. By plunging the bulb in melting ice the mercury will contract to the freezing point, which is marked, and by plunging the instrument into steam it will expand to the boiling point, which is also marked, and then the scale is graduated between these two points. But if the tube is not equal in size all the way through it will not expand or contract equally all the way along, and therefore will not be accurate. It is on account of its evenness of expansion that mercury is selected as being the best substance for registering with in a thermometer. Every cheese-maker should keep one standard thermometer, and not use it for anything else except for testing his other thermometers. If you want to choose a good thermometer get several and place them in water at about sixty degrees as tested by your standard thermometer. If one runs two or more degrees over sixty do not accept it. If it falls much below the sixty reject it also. Take one of those closest to sixty.

The temperature of the milk at the farm is an important thing. I do not think it is necessary to keep the milk as cool as is generally advocated. Before the cheese-maker can start his work he must pay some regard to what we call the ripeness of the milk. Except in extremely hot weather I do not think it is necessary to cool milk. In some places and under certain conditions milk will work fast, and in other cases it will work slowly, and so it is necessary to use judgment. But as a rule it is not necessary to cool milk on the farm. The milk may as well ripen at the farm as have the cheese-maker wait around for it to ripen at the factory. I believe that all milk waggons should have canvas covers to protect the cans from the sun and dust. The man who drives the milk waggon should also be clean. One of our leading factories in the west stipulates that the milk-haulers must wash themselves at least once a week. (Laughter.)

The temperature of the making and curing rooms deserves close attention. I do not think it is necessary to close up the factories and keep them as hot as they are frequently kept. The temperature of the making room should be kept somewhere about seventy degrees. If it is desirable that the curd should be kept warmer than that it can be done by putting warm water under it. The best temperature for the curing room is about sixty-five degrees, and perhaps in the winter time it might be kept at seventy degrees. In the summer time I do not think we can keep the curing room too cool. We cannot pay too much attention to the curing room ; and too often it is almost neglected. I am of opinion that the curing room should have a double wall, with an air space all around. We have a simple device in use for cooling our own curing room. We use a large pan, six feet long, three feet wide and four inches deep, placed on an upper shelf. We place a block or two of ice in the pan in the very hot weather, and we find that under these circumstances the temperature will not exceed sixty-five or seventy degrees, when otherwise it might range from eighty to eighty-five degrees.

Let me briefly consider temperature in setting. The best temperature for setting, is I think, about 86°. One or two degrees either way will not make much difference with normal milk. In the case of fast ripening milk we sometimes set at 84°, and occasionally as low as 80°. We have, on the other hand, made some nice cheese by setting slower milk at 90°. If the setting is at too low a temperature, however, there is a tendency for the cream to collect on top of the vats of milk due to the longer time required for coagulation. Certainly it has been our experience that there is more loss of fat when setting at the lower temperatures—80° and below.

Temperature in cooking is the next point to which I would direct your attention. About 98° gives the best results in cooking curd. I believe it would be an advantage to cook not quite so high as is done in some cases. Cooking at from 95° to 97° would perhaps give better results with curds from milk testing three per cent. of fat or below. In cooking, the richness of the milk should be considered. A vat of milk that is rich in fat should be handled in a different way to that of a vat of poor milk ; as a rule it needs higher cooking. Cheese made from milk with a poor percentage of fat is likely to make cheese harsh in texture. Cheese made from milk with over four per cent. of fat has a tendency to be pasty and weak in body. A tendency to harshness in the body may be overcome by cooking at a lower temperature and by using less salt, and a tendency to pastiness may be overcome by cooking one or two degrees higher than usual, or by using more salt. Yet I have to admit that the more I study cheese-making the more mysterious the whole thing becomes. There are many difficulties and seeming contradictions. We have made cheese from milk with 2.7 per cent. of fat in it, and the experts have declared it to be pasty, and so also in the case of milk with four per cent. of fat. Higher cooking has a tendency to improve the flavor of gassy curds. By cooking such curds at a temperature of 99° or 100° we found that the flavor of the cheese was improved, but that it made the texture of the cheese somewhat harsher. We gained in flavor but we lost in texture. Now, which of these evils shall we choose? I would say, by all means look after the flavor first of all, for I think we will all admit that in cheese flavor is more important than texture. Cooking from 98° to 103° had no appreciable effect upon the time from setting to dipping, nor upon the per cent. of fat lost in the whey. In two cases there was less cheese from the higher cooking.

The time from setting to dipping is important, but the temperature of cooking seemed to have little or no effect upon the number of hours from setting to dipping. Nor had it any effect upon the time from dipping to salting.

I will say a few words about temperature for putting to press. For this purpose I believe that a temperature of 80° to 85° is about right. I am of opinion that curds are too often cooked at too high a temperature, and too often put to press at too high a temperature. In an experiment when the curd was put to press at 66° the cheese was declared to be finer than that which was put to press at 80°, and both were made from the same curd.

Rennet.

What is rennet? We really do not know very much about it. Bacteriologists tel. us that rennet is an unorganized ferment, *i.e.*, without any particular form, while the ferment that changes the milk into lactic acid is an organized ferment, or has a distinct form. A man putting this last named ferment under a microscope can distinguish it from any other form of ferment. Rennet ferment has no particular form or shape, yet it contains that power or quality of coagulating milk which we may call an active principle. Good rennet has a peculiar flavor which you should endeavor to retain. Rennet varies in strength. When a man says "use two ounces of rennet," what does he mean? That is hard to say, for much depends upon the strength of the rennet. Keep a supply of standard rennet, and test all your rennets. In testing the strength of our rennets we take eight ounces of milk from a vat and put it into a glass at a temperature of 86°, and, after adding one drachm of standard rennet, we take the time required for coagulation. We take another eight ounces of milk and add to it a similar amount of the rennet which we wish to test. In this way the two can be compared as to strength. If the standard rennet will coagulate eight ounces of milk at 86° in twenty seconds, and the rennet we are testing coagulates the eight ounces of milk in twenty-four seconds, what is the comparative strength of the two? The relationship is as five to six, or five gallons of the standard rennet is equal to six gallons of the other. However, if the rennet is not too weak, it may make good cheese. Look out for rennets which are made strong with acids. This class of rennet is a cause of much trouble to the cheese-maker. They make soft, weak bodied cheese.

Rennet has a digestive effect on milk. When a calf drinks milk the stomach at once begins to digest it. Of course there is some difference between the rennet when in a calf's stomach and when it is in the milk vat, but the action is very similar. The more rennet we put into the vat the more rapidly the cheese will cure. The casein in the milk is kept in solution by the action of the alkalis present. Acids coagulate milk by neutralizing the alkalis, thus precipitating the casein. But when rennet is added to the milk the casein is chemically changed into two parts, one of which is soluble and the other insoluble. The solid or insoluble we call curd, and out of that we make the cheese. The soluble part runs off in the whey. Theoretically, the sooner we can obtain the coagulation the less loss there is likely to be in the whey. If we use too much rennet, however, we are likely to get the curd too pasty. Where we used from one to two ounces per 1,000 pounds of milk it caused a loss of fat in the whey, and where we used eight or nine ounces there was also a large amount of loss. The extremely small quantity and the extremely large quantity of rennet alike caused an extra amount of fat to pass off in the whey. Where we used four and a half ounces of rennet per 1,000 pounds the cheese got closer the longer we kept it. The cheese made from the milk in which nine ounces of rennet had been placed lost two points in flavor in one month, and lost one in texture, but gained one in closeness. The two ounces of rennet cheese gained in flavor during the second month.

Effect of Acid.

There are two or three ways of determining the degree of acid in curd, but none of these are as accurate or as practical as we would like. The English experts are now using an alkali test for the acidity of milk, which is more accurate than the plan common with

us. We use what is known as the hot iron test. I doubt whether this is really a test of acid in curd. I think that as the curd ripens it gets somewhat stringy, and that the hot iron test reveals the stringiness or flakiness of the curd rather than the amount of acidity in it. When we dipped curds which were sweet, with practically no acid, according to the hot iron test, they had a tendency to break down, and there was a lack of keeping quality about the cheese. In other words they went off in flavor very early. We got better results with the hot iron test, showing one-eighth of an inch. About three-quarters of an inch to one inch of acid at milling has given us best results. I took two cheese to Woodstock for the experts to examine. One of these had been milled at an inch of acid on the hot iron and the other at one and a half inches; and those who tested the cheese decided that the former was the better. We aim to have the curd ready to salt in two and a half hours to three hours after dipping, and about half-way between dipping and salting we mill the curd. (I have used the terms one-eighth of an inch acid, etc., because it is understood by cheese-makers, and also for lack of a better term, though I feel quite sure that the hot iron test does not indicate acidity, but rather a condition of the curd.)

Salt.

What is salt? Salt is a compound of two elements, sodium and chlorine. Sodium is a metal, and it requires to be handled very carefully. If a little of it got on your finger it would burn it severely. Chlorine is a poisonous gas. You need to be careful in testing briny whey with the Babcock tester. Chlorine and sulphuric acid will liberate a gas which it is dangerous to inhale.

The effect of salt in curds is to prevent fermentation. Of course there must not be too much salt put into the curds, else it will check fermentation altogether, and that is not desirable. You can therefore see the importance of trying to arrive at the proper proportion of salt so as to regulate the degree of fermentation. Salt has a great affinity for water or moisture. On account of this tendency to absorb moisture it has the effect of making the curds drier. Another effect of salt is that it gives flavor and body to the cheese. We tested cheese made with half a pound of salt to 100 pounds of curd, and also with one, four and five pounds of salt to the 100 pounds of curd. Where we used only a little salt it gave us a cheese with a very insipid flavor and weak body. The best spring cheese was made by using two pounds of salt to 100 pounds of curd. At the end of three weeks it was not as good as where a less quantity of salt had been used, but at the end of six weeks it was much the better cheese. For cheese to be used soon a smaller amount of salt will suffice, but where it is to be kept for some time use a larger quantity. The more fat there is in the milk the more salt should be used on the curd. We base our salting upon the 100 pounds of curd rather than upon the 1,000 pounds of milk. We use less salt in the spring and more in the fall. In the case of a bad-flavored curd use more salt. I have proved this to be an advantage.

I believe it would be to the advantage of the cheese-making industry if the patrons of the factories knew more about what goes to make a good cheese than they do. If they spent more time in the cheese factories, watching operations and observing the steps of the process, they would be better able to handle their milk. It is only by the hearty co-operation of patrons and makers that the cheese industry can be made genuinely successful. (Applause.)

THE STABLE LIFE OF A DAIRY COW.

Mr. John Gould, Aurora Station, Ohio, was again called upon, and gave the following address: Only a generation ago the announcement that a lecture would be given with the above title would have been treated as a great joke, as cows then, as now understood, had no stable life, and as dairying is now conducted, one can see an evolution that has advanced the care of the cow from her sleeping apartment in the woods, to the present well constructed stable with all modern conveniences, even to water in the mangers, and summer food at hand, and more kept in that stable from winter to spring.

Dairying as practised to-day, and it can be profitable in no other way, is almost wholly an artificial condition. Nature and its way of providing shelter and food supplies is not now being regarded as a safe reliance in the dairying of 1895. About all the cow of to-day shares in common with the one of 1850, is that of the maternal function. To-day we have thoroughbred dairy cows, and the cow of long ago had no breeding that could be called such. Now we have thoroughbred barns fitted for cows, thoroughbred feeds raised with reference to the wants of a milk producing cow, cows soiled in the summer to make the pastures what they should be for the maintenance of the milk flow, and a thoroughbred dairyman to see to these cows, and feed and so care for them that nature is assisted at every step. The "scrub" cow is a product of nature unassisted. A scrub cow and an untutored Indian are as they appear, because of their reliance so largely upon nature for food and protection. Wild horses, Texas cattle, razor-backed hogs and mountain sheep are nature's products. (Laughter and applause.) They are the results of farming without barns, lack of well selected foods, and full sustained rations every day—a succession of feast and famine, extremes of heat and cold, and wars of elements, and the escapes of the tyranny of brute force. This, and breeding from the chance of the survival of the fittest, rather than the mathematical certainties of like bettering like, and more, that the uniting of more than average excellencies raises the scale of quality and development of a quality that soon carries with it its specific conformation. The providing and feeding and sheltering better than nature can, bringing in influences and forces that nature can only hint at, and training that is ever latent otherwise, has given us the improved breeds, and with it an economy that nature must, to succeed even in its way, show great prodigality, so that to-day living profit and courage for the future is given to the farmer who has live stock, where nature left alone only exists, and that at a fearful cost of life and material.

The stable has been a great factor in all this artificial condition that is now found so essential, and it has been a great uplifting power in making the dairy the financial strength it ever assumes, and as we increase the productive power of the cow and economize her food, it is noticed that it was the stable behind it that made it possible to economize that food, and better the cow; for on the one hand it made the summer more nearly a year long, and made it possible to use more of the food to make milk and a better cow, as the barn stood between her and nature, and so she needed to give less of that food to the demands of self-support, which being interpreted means warming barn yards with good food and "shingling" the cow with costly cornmeal to protect her from chilling rain.

I think you readily see the point I wish to make: that the protection from storm and cold, uniformity of temperature, avoidance of extremes of any kind, and an attempt to have 365 days of summer on the farm, lies at the foundation of an all-successful dairying. The liberality of the cow—and all dairying must recognize the fact that beneficence governs—is what we must seek, and all the wants that can be artificially supplied at cost, requires correspondingly less expenditure on the part of the cow, and the greater will be her gifts to us in return; so we ask, when shall this stable life of the cow commence? Ten years before she was born! The calf's mother must be well cared for. The idea of parental influences is becoming stronger each day with the best breeders, and while the cow is carrying the calf, the care, feed and other influences that surround the mother cow will be more strongly inherent in the future calf. So I would have the mother of the calf well stabled, fed and cared for, and then if circumstances were such that I could as well care for the calf, let it be dropped in the early fall, but if a spring calf, let it remain in the barn the first summer; here it can be well cared for and fed. Remember now that this calf is the cow's baby, and in some things is not different from our little folk in the house. Do not feed it on cold sour milk, and because it refuses to drink, hold its head in the pail with a stout hand, guided by an intelligent (?) mind, with a purpose born of manliness, give an exhibition of drinking or drowning. Feed it warm sweet milk, in which there is a little cooked oatmeal; later on add oatmeal, and when cud chewing commences give it whole oats and some fine hay.

For the first summer, I repeat, keep the little calf in the barn. Do not turn it out in the big meadow or any other field, but in a roomy stable where the food goes to the

calf, and not to a horde of hungry flies. We do not care to furnish food to them. We want to build up a dairy cow. The time has passed when we can go into the street and take up any cow and make money. Let us feed this calf to develop bone and muscle, and not fat, and build up the cow we want.

The moment the young calf comes into the dairy we want to put the feed to it—the food that we want is food that will make milk. Let us find this calf nitrogenous food. Do not feed it solid food till it can digest it. Timothy hay should not be fed to it. Its little stomach will not digest it. Let us wait till the calf begins to chew its cud, then solid food may properly be given and will assist it in coming to a good growth.

The future value of the cow depends much on the care given the calf during the first winter. If neglected the first winter, spring may find us with a calf worth five dollars—about what it was worth when five weeks old. Let us have a calf that grows all the time—that develops quite as much in winter as in summer. For this purpose we should feed it to produce growth, and bone and sinew, and not fat. To be all right it must have a capacity to eat.

The heifer should come in in the fall, when twenty-four months old. I believe in training a heifer so that when she comes into the dairy she comes in with cow habits, and will milk the first time without raising her foot. She should run with the dairy cows, be stabled and come into the dairy with dairy habits. I would feed her liberally with bran for that developing life she is having to supply.

I do not believe in too much tomfoolery about her; I do not believe in children teaching her to fight. I would have her handled. Please do not teach her vicious habits. Make her believe that she is a cow. One of my heifers had a calf out in the pasture. I sat down by her in the middle of that forty-acre field and milked her, which I thought far better than to tie her or put a rail across her back.

What is the stable for? With that stable life we prolong her milking days, and keep up the development of milk. The stable of the future will be built differently from the stable of the past. The cows should have the best kind of a stable with windows in it. It should not be damp and chilly and dark, with no chance to light it and no chance to warm it, and where you will not get the results you should for your feed. We had such a one which we converted into silos and box stalls. Outside of that we built our cow barn. We had one then with double walls and lined with matched lumber, with each cow occupying a stall room of three feet and six inches, and with a ventilator, so we can temper that stable just as we wish.

I am not in favor of turning cows out in the winter. I am an advocate of each cow having her bath in the sunshine every day, which we can have if the windows are so placed that the sun shines in on all sides.

But if cows are to be kept in the stable from fourteen to sixteen weeks in the winter, they must have their surroundings in good keeping with the demands, and that is pure air, a stable free from bad smells and foul odors, a stable free from dampness, and above all one in which the temperature does not go below forty degrees. The importance of sunlight must not be overlooked. We turn cows out of the stable more on account of the beneficial effects of sunshine than any other demand; so in the stable, if the cows are to have continuous stabling, there must be windows and sunshine. To this end, the stable that is in the form of an "L," extending south from the barn, with its windows on east, south and west sides, fulfils the demand for light and sunbaths. No stable should ever be tolerated any length of time that implies a condition of turning out the cows to add to their comfort. The lighting of a barn is not as hard a problem as the ventilation, and this is solved largely by two features, a water tight gutter into which absorbents are placed every day as soon as the stables are cleaned, and a liberal use of road dust as a deodorizer, a substance as good in many respects as land plaster. The only thing that is urged against its use is that it only costs the trouble of collecting, though land plaster is to be highly commended. The other matter is plenty of room for each cow, so that she shall have at least 600 cubic feet of air space, and more would be better. Then if the old fashioned plank floor laid on a cob house foundation, or big joists up two or three

feet above the ground, is discarded, and the floor is either cemented or made of well pounded down clay on the immediate surface, there will be little chance for the formation of noxious smells and foul air. Just where the line of exercise for the winter milch cow is to be drawn, is a hard thing for many to settle, but if a man has a well appointed stable and can keep good sanitary conditions the matter will settle itself, just as it is rapidly being done in the cases of hundreds of men who, when they have once tried it, say that continuous stabling is far the best way, and that exercise beyond the health demand is at the expense of milk ; so with the good stable the exercise problem is one that solves itself. This stable should be made pleasant. We think a cow, other things being equal, will "enjoy" being in a nice stall and stable far better than in a close, dark, damp one.

Keep the stable whitewashed. A whitewashed stable looks a great deal more cheerful. I believe a cow has more humanity than we give her credit for ; I believe she should have her own home. The cow becomes wonderfully attached to her home, so do not keep changing her around. I recall an instance when it became necessary to make some changes in the stalls of my cows. They were in different stalls for about twenty-four hours. Their actions told very plainly that they were homesick. Let every cow have a place of her own in which to stand.

Another thing about tying up cows. You know an animal can be taught to do almost anything. I was brought up to think the stanchion was just the thing. A stanchion is an instrument devised for punishing man. We have changed it for putting a cow in. I have discarded the stanchion altogether and use the chain. The stanchion is going, and going very fast ; the chain or rope is coming in very fast. The swinging stanchion is beginning to be the thing, giving the cow all the freedom possible.

We do not begin as a rule to tie up the cow early enough in the fall. We have an idea that she has got to go through a toughening process to make her hardy. We can feed her and make her hardier than we can freeze it in by letting her stand out. Whenever we want fires in our houses, then we want the cows in a warm stable. If the cow becomes chilled through, she must shrink in her milk, and extra feeding is required to bring her back to her former standard. We do not as farmers give feed enough to the cow. We assume that the frosty grass of October is good enough food for her. At the same time if she was fed better the results would be far more satisfactory to us. Last year I had a good field of clover half a mile from the house ; we divided the dairy and sent five into that clover field, frosted two or three times, and kept the others in the barn. The cows that went to the lot shrank in their milk, while those that remained in the barn gained. The food was expended in exercise. Next fall we shall not try any frosted clover. Those that are not in milk I shall not be quite so particular about, but the winter milker shall have her food at the barn, and be so cared for that the ration she eats shall cost her little for travel, and be of a quality better than frosted herbage. There should be no abrupt changes from fall to winter, and so supplied with attention that so far as food and warmth are concerned, she shall not know that such a thing has been going on as a change from fall to winter, for if we accustom this cow to feel the blasts of winter, the relaxed condition of the system, that is the great thing in milk production, must give way to a feature of self protection and shrinkage of milk results, and when this takes place it costs roundly in extra food to re-establish the flow again.

This stable life allows the farmer to soil his cows with exactness, either in whole or part. The time has passed when the dairyman can rely upon the summer pasture for the sole food of his dairy, and in the winter, summer foods are in demand, for he finds that with a warm barn and a contented cow in it he can feed these abundantly grown and cheap succulent foods, and winter a milch cow cheaper than he used to a dry one fed on hay, and I do not think that a dairyman can longer afford to feed very much hay. Why, if an acre of silage winters two cows, an acre of good clover one, and it takes four acres of pasture to two-third summer a cow, why do we keep on mowing one-half of our farms to winter a dry dairy, and pasture the other half of the farm to make cheap milk ?

Perhaps if I give you a glimpse of my own practice the idea of wintering cows in milk may be made a little more practical than any sort of generalizing, and while it does not essentially differ from the practices of hundreds of other dairymen east and west, it may to some of you seem a little advanced, especially in comparison with the stable life of the cows when I was a boy, which the greater part of the winter consisted of being fed hay at the stack and sleeping in the woods, and, as is recalled by the older ones here, that cow hides that started trade in the spring.

We aim to have our cows come in during the fall months, and get the flow of milk established before winter. We provide soiling crops to keep up the feed and flow of milk, and feed in addition a small ration of grain. We have as yet found nothing better than sweet corn up to the time that the southern silage corn gets well eared out. Clover is far better cut and fed in the mangers than to allow the cows to graze it. We begin to keep the cows in nights by the 10th of October; and later on if heavy rains are falling, and chilly storms of any magnitude, they are not turned out during its prevalence. As the weather become colder they are kept in more and more, until the 1st of December, when they are left in the stables continuously until the warm days of spring.

As soon as the corn-stalks and roughage are well fed up, the silo is opened and then winter feeding begins. Then we settle down at once to twice a day feeding all they will eat up clean and no more. We would say that each cow has her own place and is never tied anywhere else. The rigid stanchion has been discarded, and when it was abolished in New England as a torture for human criminals, it should have been made into kindling in the cow barns, for no amount of argument will set aside the fact that they are anything else than a handy way to fasten cows, and every argument for them is from the man's side of economy of *time* and the like. If there are to be winter calves dropped, have a "nursery" box stall right in the stable, so that the cow that is to need it will not be forced to go into some other part of the barn, into a strange place and a colder temperature. A cow is a great home body in regard to her winter quarters, and this feature should be humored.

The milking should be regular as to time and the feeding as much so. Decide upon a time to milk and feed and stay by it. We think it best to feed immediately after milking, then all is quiet and there is no looking and reaching after fragments of food, and the attention of the cow is "on the milking" and not something else. Our ration is for each cow daily divided into two feeds, fifty pounds silage, five pounds hay and six pounds of mixed grain, largely wheaten "seconds." Before the cows is a V-shaped trough at the top of the sloping manger that furnishes them their water. To avoid the trouble and risk of warming water for them, we have a large thirty-barrel iron tank in the stable, and it is kept full from a deep rock well near by, and this keeps the temperature not far from that found in the stable, and we think it is as well as if it was warmed. About two hours after the ration has been eaten, and by the way the hay is fed immediately after the silage, the trough is filled full, the supply pipe from the tank left open, the cover of the troughs turned down, and the cows are now ready to take a full draught of water. We do not like to have them drink and eat at the same time, and besides, they fill the trough with meal, silage, hay and the food generally. Then these cows sleep, chew cuds, dream and take life easy until milking time at 5 p.m.

In the spring, the fall customs are largely repeated, and about the last of May the cows are left out nights. When these cows that have been milked from the year previous come to grass, they take on a new resolve to milk up with the best of them, and as a rule, for ten weeks they give almost fresh messes, and then in the last weeks of July and the torrid month of August they are dry—some of them, and when the first ones become fresh in the early fall others are yet giving fair messes of milk, so that now our winter dairy under this course of feeding and care has actually become an all-the-year-round dairy and gives us a little income all the time, which is and has proven a pretty good weapon to keep the "wolf away from the door."

The stable life of the winter milker is a question of great importance. We as dairymen have got to manage for both summer and winter. We as dairymen have to

make three hundred and sixty-five summer days on the farm. Let us have our dairies bring in something every day in the year. We should put intelligence in our work and create a love for our business. Let us learn all we can about it and quit holding grumble meetings. Instead, let us try to raise our occupation to a higher level. We must do this if we ever reach our proper position as dairymen, and when we become dairymen in truth and practice we will find that the stable life of our cows are their most profitable days, and so not because of "good luck," but rather management based upon facts, and each and every one of these facts in accordance with the cow's idea of comfort. (Applause.)

THE KINGSTON DAIRY SCHOOL.

Mr. J. A. RUDDICK, Superintendent of the dairy branch of the School of Mining and Agriculture at Kingston, delivered an address upon the work done for dairying in that institution. He said that the number of applications received up to date for 1896 was seventy-eight, against fifty-three at the same time last year, and that there were twenty-one applicants for the special course. Fifteen of last year's students had returned to get fuller instruction. The following facts were then presented by Mr. Ruddick:

The School of Mining and Agriculture, Kingston, Ont., aided by the Departments of Agriculture of the Dominion and the Province of Ontario, opened its dairy school on Thursday, December 13th, 1894.

The School was under the management of Jas. W. Robertson, Dominion Dairy Commissioner, and one of his assistants, J. A. Ruddick, was resident superintendent and instructor. He was assisted by L. A. Zufelt, instructor in butter-making, and G. G. Publow, instructor in cheese-making.

There was a series of eight regular courses, specially for cheese-makers and butter-makers who had the experience of working for at least one season at one of these branches. Each course included practical instruction for two weeks in either cheese-making and the testing of milk, or butter-making and the testing of milk. A student was allowed to take both courses. The School was open equally to male and female students.

In addition to the practical demonstrations and illustrations in the School, a course of evening lectures was given on the following subjects:

"Chemistry of Dairying," by Professor JAMES, Deputy Minister of Agriculture.

"Carbonic Acid; its Relation to the Mineral, Plant and Animal World," by Professor GOODWIN.

"Clay and its Silvery Metal," by Professor GOODWIN.

"How Flowers Make Insects Work for Them," by Professor JAMES FOWLER.

"Rocks and what they are made of," by Mr. W. G. MILLER.

"Entomology, a Branch of Practical Agriculture," by Mr. JAMES FLETCHER, of the Experimental Farm, Ottawa.

"Asbestos and Mineral Wool," by Professor NICOL.

"Color in Chemical Study," by T. L. WALKER, M.A.

"Social Life of Animals," by A. P. KNIGHT, M.A.

"Beet Root Sugar," by Mr. ROBERT LAWDER.

"The Cheeses of the World," by Professor RUDDICK.

"Nitrogen," by Professor GOODWIN.

The lectures in the School included "The Composition of Milk," "Milk Testing," "Butter-Making," "Cheese-Making," etc., etc.

The building is so constructed as to provide a model butter and cheese factory, with special rooms for milk testing, lectures, etc. It is located almost in the centre of the city, and good board and lodging can be had in its vicinity at prices ranging from $2 50 to $3 per week. On reaching the city students should take the street cars from the railway station and ask the conductor to let them off at the corner of Barrie and Union streets, near the School building.

The following are the names of the students who attended the School during the past winter :

Name.	P. O. Address.
Armstrong, H. T	Manotick, Ont.
Breman, Wm	Deseronto, "
Berlanguet, J. W	Admaston, "
Buell, A. W	Caintown, "
Brown, Lester	Athens, "
Blanchard, L. F	Athens, "
Babcock, A	Wilton, "
Buro, J	Milleroches, "
Bruyere, A	Embrun, "
Burwash, J. F	Brewer's Mills, "
Bowers, D	Renfrew, "
Campbell, Geo. D	Renfrew, "
Cramer, J	Glenvale, "
Cook, J. L	Warburton, "
Cochrane, Chas	Sunbury, "
Culbert, B	Athens, "
Cochrane, Wm	Glenburnie, "
Currie, A. P	Vancouver, B. C.
Chuthem, S. S	Morton, Ont.
Clark, Jas. F	Balderson, "
Cochrane, R. B	Glenburnie, "
Davy, G. L	Murvale, "
Dean, W. N	Moira, "
Dean, J	Moira, "
Dougherty, Jas	Elginburgh, "
Dicks, C. H	Lennoxville, Que.
Embury, Thos	Thomasburg, Ont.
Eastman, Thos	Metcalfe, "
Elliott, R	Carp, "
Echlin, John	Balderson, "
Fairfield, H. E	Belleville, "
Ferris, Miss E. M	Elginburg, "
Free, H. R	Cold Springs "
Fitch, U	Boonville, N.Y.
Ferrier, A. A	Scotch Line, "
Fitzgerald, Wm	Yarker, "
Gould, Peter	Napanee, "
Glover, Hugh	Jones' Falls, "
Glasgow, W. C	Cannamore, "
Gibson, G. M	Douglas, "
George, John	Cataraqui, "
Gagner, Jos	Embrun, "
Guthrie, Wm	Perth Road, "
Guthrie, Miss M	Perth Road, "
Hogan, James	Mt. Chesney, "
Hurst, G. A	Gananoque, "
Henderson, Jno	Winchester, "
Herity, A	Moira, "
Hutcheson, J. B	Sharbot Lake, "
Hill, Wm	Frankville, "
Hall, Wm	Woodstock, "
Hardy, R. A	Bowesville, "
Johnson, J. F	Kepler, "
Jackson, Simeon	Huntington, "
Keenan, J. J	Kingston, "
King, D. L	Sydenham, "
Kearney, Joseph	Morton, Ont.
Kenney, Jos	Kingston, "
Keefe, D. O	Elgin, "
Leroux, G	Summerstown, "
Loverin, E. W	Greenbush, "
Lennan, Barney	Godfrey, "
Lowergan, J. J	Warkworth, "
Morton, H	Moira, "
Morgan, J. E	Kingston, "
Murphy, P. J	Bogart, "
Mercer, J	Mallorytown, "
McNeil, E. L	Lansdowne, "
McCann, J. D	Perth, "
McDonald, J. A	Admaston, "
McAlonan, Jos	Seeley's Bay, "
McDonald, Wm	St. Lawrence, "
McConnell, J. D	Dominionville, "
McNamee, James	Stanleyville, "
McDonald, H. A	Sunbury, "
McCowan, D	Maxville, "
McRae, C. F	Moore Creek, "
Nolan, Peter	Phillipsville, "
Newman, J. W	Spencerville, "
Newman, Wm	Prescott, "
Pennock, J	Hartington, "
Patterson, Thos. J	Sunbury, "
Porter, Geo	Elginburg, "
Redden, Ed	Portsmouth "
Renwick, Geo	Lang, "
Raney, Neil	Mainsville, "
Rice, F. A	Currie's Crossing, "
Rone, Fred	Mt. Chesney, "
Stafford, W. W	Lansdowne, "
Stanley, R. J	Morton, "
Smith, P. L	Haley's Station, "
Spowart, Thos	Stella, "
Scollard, Jas	Ashdod, "
Stringer, M. P	Sand Bay, "
Stringer, M. G	Sand Bay, "
Suthall, David	Mt. Chesney, "
Storms, C. B	Wilton, "
Smith, J. E	Sunbury, "
Sinclair, J. C	Brandon, Man.
Somerville, F. J	Morton, Ont.
Tehan, M	Westport, "
Totten, H	Renfrew, "
Trousdale, P. W	Sydenham, "
Thurston, R. M	Dunsford, "
Thompson, J	Gananoque, "
Wilson, James	Carswell, "
Wellborn, Miss G	Kingston, "
Ward, R. W	Wallbridge, "
White, F	Sidney Crossing, "
Webster, M. G	Kingston, "
Wilson, Wm	Renfrew, "
Walroth, J. W	Maberly. "

ATTENDANCE BY COUNTIES.

Frontenac	32	Students.	
Leeds	21	"	
Hastings	10	"	
Renfrew	10	"	
Lanark	6	"	
Carleton	4	"	
Glengarry	3	"	
Grenville	3	"	
Stormont	3	"	
Lennox	3	"	
Oxford	2	"	
Russell	2	"	
Northumberland	2	Students.	
Victoria	1	"	
Peterboro'	1	"	
Addington	1	"	
Dundas	1	"	
Manitoba	1	"	
British Columbia	1	"	
Quebec	1	"	
New York State	1	"	
Total	109		

ATTENDANCE BY COURSES.

Course beginning.	Butter. No. of students.	Cheese. No. of students.
December 13th, 1894	6	6
December 27th, 1894	8	10
January 10th, 1895	11	16
January 24th, 1895	8	14
February 7th, 1895	9	15
February 21st, 1895	11	14
March 7th, 1895	12	23
March 21st, 1895	6	19
	71	117

1	student	remained	at the	School	16 weeks.
1	"	"	"		12 "
1	"	"	"		10 "
4	"	"	"		8 "
3	"	"	"		6 "
22	"	"	"		4 "

The average stay was 4 weeks.

Summary of Attendance.

124 applications were received.

109 students attended the School.

70 students took the cheese course only.
13 " " butter "
26 " " both courses.

ANNOUNCEMENTS FOR 1895-96.

Management. The School will be, as last year, under the direction of James W. Robertson, Dominion Dairy Commissioner.

The staff of instructors will include superintendent and lecturer, instructor in butter-making, instructor in cheese-making, instructor in milk testing.

Courses. An ordinary course will provide practical instruction for two weeks in either cheese-making and milk testing, or butter-making and milk testing. In addition to the practical work, lectures will be given on the following subjects: "Business Management," "The Composition of Milk," "Milk Testing," "The Preparation of Milk for Cheese-Making," "The Principles of Cheese-Making," "Practical Cheese-Making," "The Separation of Cream from Milk," "Butter-Making," "Creamery and Cheese Factory Machinery," "Care of Engine and Boiler," etc., etc.

The ordinary courses will begin on the following dates:

1st	course,	Tuesday,	Dec. 10th, 1895.
2nd	"	Thursday,	Jan. 2nd, 1896.
3rd	"	"	Jan. 16th, 1896.
4th	"	"	Jan. 30th, 1896.
5th	course,	Thursday,	Feb. 13th, 1896.
6th	"	"	Feb. 27th, 1896.
7th	"	"	Mar. 12th, 1896.
8th	"	"	Mar. 26th, 1896.

The number and attendance at each ordinary course is limited to thirty—fifteen in the cheese-making and milk testing department and fifteen in the butter-making and milk testing department.

A special course in cheese-making will begin on February 13th and continue until March 26th. This course is intended to provide for a more advanced study of the art of cheese-making than is practicable in the ordinary courses. Besides the practical work of cheese-making and milk testing each day, students will be required to attend the lectures in the ordinary course and also a series of lectures on more advanced work. Some work of research will be conducted with and by the students; and a certain amount of reading will be prescribed.

Conditions of Admission and Fees. Any person over sixteen years of age who has worked at least one season in a butter or cheese factory is eligible for admission to the ordinary courses.

Admission to the special course in cheese-making will be limited to those who have had at least two years' experience working in a cheese factory.

Each student will be required to pay a registration fee of $2, which will entitle him to free tuition for four weeks, viz., two ordinary courses in either cheese-making or butter-making, or one course each. For each additional course, or part of a course, a fee of $1 will be charged. Each student in the special course will be charged $1 in addition to the registration fee of $2.

Certificates. A certificate of attendance and application will be granted to each student who (1) attends all the lectures during two ordinary courses or during the special courses, (2) is not absent from the school during the hours of work without a reasonable excuse, and (3) shows a desire and capacity to profit by the instruction given.

Diplomas. Each student in the special course who passes a satisfactory examination at the end of the term, and who proves to be a careful and competent cheese-maker and manager by successfully conducting a factory during one season after leaving the School, will thereafter be entitled to a diploma.

General. It is the intention of the Board of Governors to open a library and reading-room in connection with the School this year.

All correspondence in reference to the School may be addressed to "The Bursar, School of Mining and Agriculture, Kingston, Ont.," and after 15th November, to "The Superintendent, Dairy School, Kingston, Ont."

During the special course in cheese-making lectures on bacteriology will be delivered by Dr. Connell, of the Royal Medical College, Kingston.

Mr. J. A. Ruddick is again superintendent, with the same staff of assistants as last year.

VOTES OF THANKS.

Moved by Mr. Edward Kidd, retiring President, seconded by Mr. Henry Wade, President-elect, That the thanks of this Association be and are hereby tendered to the citizens of Campbellford for their hospitality, and also to the press and railway companies for courtesies extended. Carried by a standing vote.

The Convention then adjourned to meet at two o'clock, p.m.

THIRD DAY—AFTERNOON SESSION.

The President-elect, Mr. Henry Wade, of Toronto, called the meeting to order at two p.m., and congratulated the Association upon the large number who had remained over until the closing session. He further said: Although not now in the cheese business I think I have the honor of being one of the earliest makers in Eastern Ontario. In fact there were few cheese factories in Canada when I began making cheese. The year after the first co-operative factory was started at Ingersoll I started one in Port Hope. Of course the modern methods of cheese-making are somewhat different to what they were when I began making in the sixties. But, as the older members of this Association know, I have been keenly interested in the progress of the industry, and have been almost a constant attendant at the Eastern Dairymen's Convention. I shall do what I can to forward the best interests of the Association during the coming year, and I thank you heartily for the honor you have conferred upon me. (Applause.)

REPORT OF INSTRUCTOR PUBLOW.

As the work of instructor and inspector is much the same from year to year, this seventh annual report must necessarily be more or less similar to that of other years.

While the number of applications for instruction was not so great as last year, yet there were more than any one man could possibly attend to. In all 117 factories received 210 visits, as follows:

Stations.	Visits.	Stations.	Visits.	Stations.	Visits.
Salem	3	Robinson's Mills	1	Opinicon	1
Mountain View	3	Rosedale	1	Lombardy	1
Ardmore	3	Mississippi Pride	1	Roseville	3
Lake View	2	Maple Leaf	1	Burritt's Rapids	3
Fermoy	2	Rosebank	1	Carleton Model	1
Westport	2	Barryvale	1	Prospect	1
Mississippi	4	Ventnor	1	Jockvale	1
I. X. L	3	Farmers' Own	2	North Gower	1
Boyd's	2	Ashton Union	1	Carp	1
Pakenham	1	Elmdale	1	Kinburn	1
L. and D	3	Farmers' Friend	1	Hazeldean	1
Clyde	3	Chantry	1	Union Pride	1
Middleville	3	Plum Hollow	1	Dunrobin	1
Hopetown	3	Farmers' Pride	1	Stittsville	3
Poland	3	North Star	2	Manotick	1
Ardoch	3	Shanley	1	Hemlock Corners	1
Watson's Corners	3	Glen Buell	1	South Branch	1
Brookside	3	Silver Creek	3	North Rideau	1
Maberly	3	Clear Spring	3	Goodstown	1
Zealand	1	Forfar	3	River View	1
Belingbrook	1	Myers	1	Daisy	1
Clairview	1	Gilt Edge	3	Roebuck	1
Tayside	1	Lyndhurst	3	Malakoff	3
Tay Banks	1	North Shore	3	Independent	3
Riverside	4	Stanleyville	3	Twin Elm	1
Dexter	1	Leo Lake	2	Carsonby	1
Drummond	3	Frankville	1	Maple Hill	1
D. and E	3	Appleton	1	Spring Vale	1
Elmgrove	3	Ontario	3	Holland	1
Mud Creek	2	Mountain	2	Fairfax	1
Elbe	1	Island City No. 1	1	Cold Brook	1
Lily Spring	3	Island City No. 2	1	Lorne	1
Palace	3	Centreville	3	Caintown	1
Smith's Valley	2	Bedford Mills	3	Gananoque	1
Portland	1	Clear Lake	1	Rapids Valley	1
Farmersville	1	Rockdale	1	Deer Lick	1
Greenbush	2	South Lake	2	Farmers' Union	1
Orchard Valley	2	Morton	1		
Maple Valley	1	Osceola	1		

I had J. D. McCann as my assistant for eighty-one days, of which he spent seventy-one in giving instructions and testing milk in factories, four travelling, three attending court, two settling fines, one detained by rain.

Of the 150 days which I was in the Association's employ, 139 were spent in factories giving instructions and testing milk, six in travelling, two settling milk cases, two detained by rain and one attending the Board of Trade.

Of the 10,150 samples tested with the Babcock and lactometer, fifty-two were found to have been tampered with, and of these fines were collected from thirty-two to the amount of $600, one-half of which went to the factories in which fines were imposed, and the other half to the Association, out of which was paid lawyers' fees and costs of court, leaving a balance of $250 to their credit. The amount contributed by factories was $725, making a total to the Association of $975. Does not this large number of deteriorated samples after so many years' inspection prove the necessity of paying for milk according to quality or percentage of butter-fat?

Perhaps I should make special mention of three cases tried, two of which the Association lost, the magistrate deciding that the milk had been tampered with, but in his judgment not by the accused parties, and dismissing the cases with costs to the Association.

In the third case a fine of thirty dollars and costs was imposed, but an appeal to this decision has been made on the ground that a previous conviction against the same man was used as evidence in the case.

Regarding inspection of factories I found the majority in very good condition for cleanliness and equipment for making cheese. Indeed, quite a number are all that could be desired. The cheese I found to be on the whole of very good quality, but in some sections difficulty was experienced with greasy curd and bad flavor. This I attribute to the peculiarity of the season and condition of milk. The season being dry the cows fell off in their milk, which consequently became very rich in butter-fat, apparently having more fat than the curd could contain. This difficulty was experienced until rain came and grass was plentiful.

The bad flavor I attribute to cows drinking impure water, and to the situation of milk cans over night. I find that where this flavor exists the patrons are careless, having their milk stand over night in milk yards or barnyards, the stench of which affects the milk to such an extent that its manufacture into fine-flavored cheese is impossible. It is astonishing, notwithstanding all that has been said and printed, that people will still persist in keeping their milk in such places.

In conclusion I would say that if we are to retain the proud position we hold to-day as a cheese-producing country, and attain the highest degree of perfection in the business of which we are promoters, the farmers must come to the aid of the cheese-maker by having their milk delivered at the factories in a better condition than is at present done, as I am satisfied that the average cheese-maker is doing his best under existing conditions.

All of which is respectfully submitted.

G. G. Publow.

AN INTERESTING DISCUSSION.

Mr. R. G. Murphy: We would like to hear a little more from Prof. Dean regarding the use of salt in cheese-making.

Prof. Dean: Regarding the quantity of salt to use, I would say that if you are making a spring cheese, to be eaten soon, as all spring cheese should be, you should use only a small quantity of salt, say about two pounds of salt per 1,000 pounds of milk. With a moist curd use more salt, and with a dry curd use less salt. If you intend to hold over the cheese use more salt, perhaps two and one-half to three pounds per 1,000 of milk. In regard to the quality of salt I think that a good cheese salt should be in the first place free from all impurities. Salt is an absorbent of impurities. If you leave salt in a room where there is a bad flavor the salt will absorb it. Salt for cheese-making should not be as fine as that used in the making of butter. If the salt dissolves too readily it runs off in the whey in the form of brine. Salt should be even in grain, and therefore do not use a salt which has some large and some small crystals. Then, again, you should prefer a dry salt. A damp salt usually means an impure salt.

Mr. R. E. Hoard: When do you ripen the milk?

Prof. Dean: We use a starter. We prefer to select the best flavored milk we have in our dairy, and we warm it up to about 90° the day before we use it. When it begins to sour we put in about fifty per cent. of water at a temperature of about 65° or 70°. If it is going to sour too fast use cold water; if not ripening fast enough use warm water. Stir this starter well into the milk, and set in a warm place until the morning. Then we take the top half-inch of the starter and throw it away in order to avoid germs of fermentation. We stir it up and mix with the milk. Of course the use of starters has been abused. A bad starter is worse than no starter at all. If the milk is ready to set at ten o'clock without a starter it is not advisable to use any starter. I think that properly used the started is an aid to the cheese-maker; but the starter abused is a curse to the cheese-maker. You may strain your starter in order to get rid of any curds that may be in it.

Mr. FREE: Don't you think that 60° is very low? In hot weather the thermometer in the factory often reaches 90°.

Prof. DEAN: I do not think it would pay you in summer time to cool the milk down to the temperature you name.

Mr. HOARD: Suppose your milk is sweet in the morning, what amount of starter should be used? Would it pay to let the milk remain in the vats, or use a starter?

Prof. DEAN: I would use a starter. Ordinarily about one per cent. is sufficient for a starter, but in that case I would use about five per cent, and I would make the rennet test at the end of half an hour or an hour. The rennet test should always be made in a vat of milk before the starter is added, for it might be that you would thus find that the milk did not need a starter. If you put in the starter before testing by the rennet you might find yourself, as the boys say, in the soup. You see you have to use judgment in these things.

Mr. HOARD: What is the reason of cheese cracking?

Prof. DEAN: I think the chief reason is that the curing room is too dry. Every curing room should have what is called a hydrometer, which will measure the moisture of the atmosphere. The other day I noticed that our hydrometer indicated that the room was too dry, and thus we were able to remedy it.

Mr. WHITTON: Don't you think that it is often caused by the windows being left open and the warm, dry air passing through?

Prof. DEAN: Yes.

Mr. HOARD: I let my windows open at night, when the air is cool and moist.

A MEMBER: Would you advise each patron to get a Babcock tester?

Prof. DEAN: I believe that every cheese factory should have a Babcock tester whether it pays by the test or not; and I would go further and say that every man who keeps cows should have one.

Mr. FREE: What about the time for setting?

Prof. DEAN: I would say in the spring from two to two and a half hours, and in the fall from two and a half to three hours.

A MEMBER: What do you think of farmers salting their milk?

Prof. DEAN: It is a very bad practice, and should never be done, as salt affects the action of the rennet.

A MEMBER: What is the price of the Babcock tester—the size a farmer would want?

Prof. DEAN: You can get a four bottle machine for five dollars.

A MEMBER: What about checked cheese?

Mr. PUBLOW: Do you ever examine your cheese to see if they are checked? Most checked cheese have become so by the curd being too oily. When the curd is greasy the particles cannot properly unite, and their failure to knit causes the checking. There is a small spot in the bandage cloth that will not unite, and it will cause the check. The cheese may bore all right, but if you will break off a piece of the cheese you will find that it is not as it should be. When the cheese is pressed the grease is pressed out of it, and lies on the outside of the rind. The class of cheese that will check is that which has been cooked too fast. It has been stirred out roughly, and the acid goes on so fast that the cheese is too moist. If you harden it up it will seem to be all right, but in a few days you will find it crack with a sudden change of air. Set your milk earlier in such a case, so that it will ripen in two to two and a half hours. There is often a danger of keeping a cheese too warm after taking it out of the whey. I cook at ninety-six degrees. Pile your curd if it is going slow. If it is going fast lower the temperature and do not pile. If it ripens too rapidly you will have an acid cut cheese probably. If I had a bad flavored curd I would always aim to have it cooked before the acid came. If I had bad flavored curds and gassy milk I would certainly use a starter.

Mr. MURPHY: A man told me that a maker asked him to sell his cheese. He was loth to do so, as they were poorly put up. However, as they had a good flavor they passed. The claim had been made in this connection that when a bad flavor was detected in the curd it was killed by saltpetre. What do you think of it?

Mr. PUBLOW: I do not think that would kill the flavor, but it would be more likely to preserve it. The best preventive of bad flavor is to have the milk in perfect condition. Be careful when you aerate the milk; and certainly do not do so near a stable. Air it where the atmosphere is pure and sweet. If the milk is as cool as the atmosphere or cooler, you may cover it up closely. If the milk is ripening too fast—cool it to the temperature of the atmosphere. Aerate milk by holding it up to the air in as small quantities as possible. It is a question about so-called gassy milk whether it is a result of gas or bad odors. I think it comes from the milk absorbing bad odors.

ADDING TWO PER CENT. TO FAT READINGS IN CHEESE FACTORIES.

Prof. DEAN, of the Ontario Agricultural College, gave an address upon the above-named subject, similar in character to that reported in the proceedings of the Western Dairymen's Convention, under same cover as this report. He gave the following mathematical explanation of the two per cent. system:

Suppose that one patron's milk tests three per cent., and another tests four per cent. In this case we have seven units of fat to divide according to the simple reading of the fat. One man ought to receive three units and the other four units. Or if we put it in the shape of a ball of fat weighing seven pounds, one man is entitled to receive three pounds of that ball and the other four. One man receives three parts (sevenths) and the other four parts (sevenths). The relation is 3-7 to 4-7, or 3 to 4. Now, when we add the two per cent. to each, we make the one (3 + 2) 5, and the other (4 + 2) 6. In other words, instead of having a ball weighing seven pounds, we have one weighing eleven pounds, and the relation is 5-11 to 6-11, or 5 to 6. Instead of there being a difference of *one-seventh* in the amount of fat (money) obtained by two such patrons, the difference is but *one-eleventh*, which corresponds more nearly to the actual difference in the cheese yield from such milk. An increased percentage of fat in the milk increases the cheese yield in all normal cases, but the increased yield of cheese is not in proportion to the increase in fat. There are six compounds which make up the substance we call milk, viz., water, fat, casein, albumen, sugar and ash. Of these but two—fat and casein—are of value in cheese-making, assuming that the water has no value, and ignoring the small amount of the other compounds which enter into cheese, these being foreign to the matter under discussion, though, of course, of importance in making and giving value to cheese as a food. The cheese-maker adds rennet to milk under certain conditions, which rennet acts on the casein and indirectly on the fat. The amount of cheese which can be made from milk in good condition, and with a skilful maker, depends upon the fat and casein present in the milk. The fat may be readily determined by the Babcock tester, but the casein can be determined only by chemical analysis, which is an expensive operation. However, the percentage of casein remains fairly constant in all our samples of normal milk, averaging about 2.3 per cent. I estimate that the present per cent. of casein over two is represented by the fat and casein lost in the whey; therefore if we add a constant number (two, which represents the casein in milk), to the varying percentage of fat in the milk, as determined by the Babcock tester, we have a correct basis in which to work or, at least, one nearly correct, and to my mind a basis which comes nearest to giving justice to the patrons of cheese factories.

I wish to deny the reports which have been circulated that I do not believe in the accuracy of the Babcock tester, when properly made and handled. I go so far as to say that paying according to butter-fat alone is a much fairer way than by paying by weight of milk alone.

A STIRRING DEBATE.

Professor ROBERTSON: The Professor of Dairying at Guelph will permit me to remark that work of investigating the relation of the component parts of milk and cheese has been going on for several years, and that the foundations of our information have been well laid. It is true that the quantity of marketable cheese obtainable from milk containing different percentages of fat does not always vary exactly in proportion to the percentage of fat in the milk; but the actual market value of the cheese made from milk containing different percentages of fat does vary in proportion to the percentage of fat in the milk. When a method of paying for milk according to its real value was first suggested, it was necessary to shift the basis of payment from weight only of milk to value of milk. The value of milk can be ascertained by a knowledge of the weight and of the quality. It may be a slight advance on the old way to shift the basis of payment from weight of the milk, regardless of quality, to weight of cheese regardless of quality; but the latter is not a fair basis. A fair basis for valuation in cheese, as in milk, is arrived at only by taking into account weight and quality. The quality of the cheese, which determines its true market value, is modified by the percentage of fat in the milk from which it was made. Suppose you take two lots of milk, one containing three per cent. of fat and the other containing four per cent. of fat, no one will contend nowadays that it is fair to divide the proceeds from sales of cheese in such a way as to pay as much per hundred pounds for the three per cent. milk as for the four per cent. milk. The two lots may weigh exactly alike, but it is essential to fairness that the valuation or division of proceeds at a co-operative factory should be made according to actual value and not according to actual weight only. The long experience I have had in the making and marketing of cheese gives me some knowledge of the factors which determine the value of cheese per pound or per 100 pounds. We all know that the casein in the cheese is one of its most important constituents when considered as a food; but the chemical composition of cheese does not determine its value in the market so much as its flavour, richness of body and other physical qualities. Cheese, like other food products, has an intrinsic or food value and has also a commercial, exchange or market value. A pound of butter is not worth as much as a pound of cheese for nourishing the human body, but a pound of butter has a higher commercial or market value than a pound of cheese; and, all other things being equal, cheese has a higher commercial or market value in proportion to the percentage of butter-fat which it contains. In brief, according to our present conditions, a pound of butter-fat, when sold as butter or sold in cheese, is worth much more commercially than a pound of casein. To take an extreme illustration: If you take a piece of absolutely skimmed cheese without any fat in it at all, but with all the casein that can be retained, it would be worth little or nothing to the producer. It would take all the market value of it to pay the expense of making, boxing and marketing; and it would take the stomach of a rhinoceros to digest it. Fat as a food is not intrinsically of as great value as casein or other albuminoids; but the fat gives an additional food value, as well as increased commercial value, to the other food materials which may be in combination with it. The more fat you have in milk up to four per cent., the more nourishing, wholesome and valuable is the cheese made from it.

From experiments which I planned over four years ago for my assistants, Mr. Ruddick and Mr. Dillon, I found that the commercial or market value of cheese by the pound was increased according as the percentage of fat in the milk was higher, in milk containing between three and four per cent. of butter fat. In my report for 1891, I said:

"In ordinary cheese-making, where you have milk containing four per cent. of fat, you have reached the maximum limit, * * * and beyond that you do not increase the value of the cheese per pound." I also said in the same report "I think that the addition of each per cent, of fat to the milk between three and four per cent. will add five-eighths of a cent. per pound to the value of the cheese. The butter-fat in some measure adds to the value of the other constituents of milk. Let me put it in the following manner: A farmer sends milk containing three per cent. of butter fat to a cheese factory and gets so much money. Another farmer sends milk containing four per cent. of fat to the same factory. According to a scale which values milk for cheese-making according to its percentage of fat only, the latter will get one-third more money per 100 pounds of milk than the patron who furnished the three per cent. milk. I do not say that his milk will make one-third more cheese; but in my opinion it will have one-third more value in cheese-making when both the quantity of the cheese and its quality are considered."

What makes your September cheese worth more than the cheese of June make? Is it not largely because of the greater quantity of fat in the September milk? Doubtless, some of the difference is due to more favorable conditions of weather. In a discussion a little while ago, the question of the flavor of cheese came up. You may have cheese that is rich in both casein and fat, and yet the flavor may be bad and objectionable. You can hardly sell such a cheese. Germs of fermentation may have gone into the milk and by their growth have given it an objectionable flavor. Such germs often generate gas, as yeast makes the form of gas which causes the bread to rise; or they may generate by-products which will give their characteristic flavor to the cheese The more butter-fat there is in milk and in the cheese made from it, the less risk is there of the cheese going off in flavor. The more moisture there is left in cheese, to make it rich in the body with a high percentage of butter-fat, the more danger is there of it going off in flavor. Consequently, the patron who sends to a factory milk rich in butter-fat, should get a higher price for it per 100 pounds than the one who sends milk poor in butter-fat, both because of the increased quantity of cheese the richer milk will yield and of the improved quality of the cheese which can be made from such milk. In the matter of the addition of two per cent. to the percentage of fat, as advocated by Prof. Dean, I may say that he has against his theory some of the strongest names known to dairymen. Prof. Van Slyke and Dr. Babcock, the latter a distinguised scientist whose name will live for centuries, and some of us who are less eminent are referred to by my young friend in one of his newspaper articles, because they do not agree with him in this matter, as "gods to the children of the south, and their worshippers in their native country and in Canada." Now, I do not say that the addition of two per cent. of fat to the reading of the Babcock tester may not be a better way of getting at a basis for the payment of milk according to its value for cheese-making than by the use of the readings of the Babcock milk tester alone. My friend, Prof. Dean, says it is a better way. I say, as yet we have no proof of the statement; but, as we have a large body of reliable evidence that the percentage of fat in milk gives an equitable basis for determining its value for making cheese, I regard the payment of milk and the distribution of the proceeds at the cheese factories, according to the quality of the milk as shown by the Babcock tester, as a safe plan; and I would not like the dairymen of the Province of Ontario or of Canada to be carried away by a little cheap puffing of a fad, or to be sent back to the old unfair method of valuing milk simply according to its weight, because doubt has been cast upon the usefulness of the Babcock milk tester by an agitation encouraged by the publication of immature and incomplete experimental data.

Prof. Dean: I am glad to see that our friend the Dairy Commissioner has got warmed up at last. I would like to say that cheese-making has advanced since he was in the business, and that we are still learning something about it. We have been making rapid strides in cheese-making since he was a maker. He has said that I have been casting slights upon Dr. Babcock and Prof. Van Slyke. I had no idea of doing anything of the sort in what I have written regarding the connection of these gentlemen with the discussion arising from this scheme of adding two per cent. to the reading of the Babcock tester in cheese factories. When I advocated this addition of two per cent. last year some persons thought that it was going to do away with the trade that had been worked up for this tester. What I said about being a "little god" referred to the Babcock tester and some extravagant claims made for it, and not to the inventor. Prof. Robertson has gone to extreme lengths regarding the value of fat in the milk for cheese-making. A few years ago he claimed that as the fat increased one per cent. between three and four per cent. it added five-eighths of a cent a pound to the value of the cheese. Now, that is pure speculation—he cannot prove it. There are more things than the fat in the milk which decide the value of cheese made from it. I may say that there are a dozen or more factors, such as the flavor of the milk, the salting of the curd, and the color of the cheese, which are concerned in deciding the value of the cheese. There are a good many thing besides the chemical constituents of milk which enter into this question. The average percentage of fat in the milk of one of our best factories in Western Ontario is from 3 to 3.5 during the season, and they make fine cheese out of such milk. If you

use milk of four per cent. fat or over it seems to make curd which produces "pasty" cheese. Four per cent. and over of fat in milk is not necessary to make good Canadian Cheddar cheese.

Prof. ROBERTSON: It has been published for three years that experiments were conducted with over 300 boxes of cheese at the Dominion Experimental Dairy Stations, and the conclusions published in my report were based upon the facts found there and not upon theory. When an investigator gets behind all the facts of a case he can afford to smile encouragingly at anyone who assails them. Of course the value of cheese depends upon something more than the fat it contains; it is determined in some measure even by the rind and the boxing. The results of the experimental work at Guelph agree very closely with those at Perth in the quantity of cheese obtained from milk containing different percentages of fat.

Prof. DEAN: I would like to ask Prof. Robertson if he sold the cheese made out of rich milk at Perth for more than he got for the cheese made out of poorer milk?

Prof. ROBERTSON: No; we sold the lot as a whole, although there was a decided difference in the quality and value of the several cheese composing it.

Prof. DEAN: Well, we sold all ours for the same money, too; and "the proof of the pudding is in the eating."

Prof. ROBERTSON: It seems to me that patrons should get paid for what they contribute to the value of the cheese and not merely to the weight of the cheese; and that if one sends a superior quality of milk with a higher percentage of fat, he should be paid accordingly; and if any premium beyond the bare justice of payment according to value is to be given, it should be given to those supplying the rich milk of finest flavor.

Mr. FREE: Does washing curd help to get rid of the bad flavor?

Mr. PUBLOW: If I had a bad flavored curd, one full of holes or stinking, I would wash when it showed half an inch on the hot iron. I would mill the curd, level up and pour the water over it at 108°. I would have the water warm enough to raise the temperature at least 2° higher than I cook the curd to. I would keep it at that temperature for twenty minutes or half an hour, and stir it all the time it was in the water, and then strain it as when I would run off a batch of curd in the first place. I would use half a pound more of salt to the 1,000 pounds of milk than ordinarily. If I had sour milk curd that could not get cooked before it had too much acid, I would wash it, and would mill it when it showed "hairs" of one to one and a half inches on the hot iron. I would wash it under the same conditions as in the case of gassy curd. Stir it thoroughly dry after running the water off, and in an hour or an hour and a half salt it. I do not think there will be much, if any, loss in weight from the washing of the curd. The only thing you will lose will be the sour whey, which will run out white. I consider that the washed curd cheese we made this year were such as would sell for the best market price. It is the duty of every patron to have his milk in first-class condition. I would recommend that makers reject any milk that would not make a first-class cheese without washing.

A MEMBER: What about turnipy flavor?

Prof. ROBERTSON: I do not know any means by which the flavor imparted to cheese made from turnipy milk can be taken away.

Mr. WHITTON: What is the difference in feeding value between a bushel of ensilage and a bushel of turnips?

Prof. ROBERTSON: The two are hardly comparable. You might feed a cow upon ensilage alone, and she would live well; but she could not live well upon turnips. A bushel of turnips would be equal to, say two or two and a half bushels of ensilage as a supplementary food.

Mr. WHITTON: Now, if a bushel of ensilage is equal to two and a half bushels of turnips, why ask about how to get rid of turnipy flavor in milk? Get rid of the turnips as food for milking cows, or eat the turnips yourselves. Mr. Gould says we can build a silo for thirty cents per ton capacity. That will give us a cheap place for storing succulent corn. An acre of ensilage will feed two cows for a year.

THE MARKETING OF PERISHABLE FOOD PRODUCTS.

Professor ROBERTSON delivered an address on "The Marketing of Perishable Food Products," which, in substance, was similar to the one he delivered at the convention of the Dairymen's Association of Western Ontario at Woodstock.

SOME LESSONS FROM A TRIP TO EUROPE.

Prof. DEAN made the following closing address: During the past summer I was allowed eight weeks' holidays, in order to visit some of the dairy countries of Europe. The marketing of our dairy products is something that comes more particularly within the domain of the Dominion Government, while the work of the Provincial Government is chiefly along the line of teaching. I went abroad largely to fit myself to be able to more thoroughly instruct the students in dairying who from time to time come under my charge. I must say that as a Canadian I felt proud when going about among the commission men and dealers in Liverpool and Glasgow to hear them assure me that most of the Canadian cheese was all right. I was told, however, by one dealer that our spring cheese does not contain quite enough moisture for a quick trade. Since coming home I have been told the same thing by one of our buyers. I was also told when in Great Britain that there was room for improvement in our mode of boxing. Our boxes are not as good or as suitable as they should be. I was humiliated to see a good many of our boxes tied up with ropes. I would also say here that there is not that distinction made between Canadian and American cheese that our cheese is entitled to. Better boxes and better handling is necessary if we are to hold our place at the head of the British cheese trade. I went over on the Dominion Line steamer Labrador. At Quebec they put on board several thousand boxes of cheese. They slid the cheese boxes down the gangway on a plank. Sometimes the covers flew off, and sometimes the scale-boards also came off, and, while the covers were put on again, I never saw a scale-board replaced. I remember that when sending cheese from Guelph to Woodstock I found that some of them were badly broken. The express companies deserve to be blown up—that is, figuratively speaking. I was told by commission men when in England that they would like to count on a regular supply of cheese and butter. We are making a mistake in the way we market our butter, and there seems to be a tendency to market cheese in a similar manner. In Denmark they ship the butter once a week, and arrangements are now being made by the authorities to ship twice a week. If we are to successfully cultivate the butter trade of Great Britain, we must make some arrangements by which we can ship our product regularly and as soon as possible after it is made.

Prof. ROBERTSON: Butter is usually about six cents higher from September to May.

Prof. DEAN: I am satisfied that in the future it will be more difficult than ever to sell an inferior quality of cheese or butter. We can keep the British market only by making first-class cheese and butter. I would like to impress upon the patrons here to-day, more than ever before, the importance of furnishing good milk to our makers all the time.

What kind of butter is desired in the British market? I was in a large warehouse in Liverpool, and I asked if I might be allowed to bore a sample of Canadian butter which was standing there. I must confess that when I did try that butter I was ashamed of the quality. I think we can, and do, make as good butter as they do in Denmark, but we make the mistake of keeping it too long. I have visited Canadian creameries and have found the butter made there of the finest flavor. But no matter how excellent the flavor may be, if it be placed in a warm room for any length of time, that butter will go off flavor. The requisites in butter are that it must be mild, fresh, pleasant and sweet in flavor. I have found, too, that Canadian butter is too high in color as a rule for the English market, and it is also too high in salt. About

three to five per cent. of salt is the right proportion for this trade—that is, about half an ounce of salt to a pound of butter. We have been teaching our students to put an ounce of salt to the pound, but we must make it less for the best British trade. When I went to Manchester I found that as a rule the Danish butter lacked what we call a good body, but, if it suits the Englishmen, we shall have to study their tastes and wants. Now, a word about the package. One of the great faults complained of in our butter is that it has a woody flavor. Some package must be devised that will not impart that woody flavor to the butter. I believe that square boxes are most popular as packages next to the Danish kiel. Had I time I would like to point out how the Danes have overcome the defects in their butter.

I would like to add a little about bacon. While in one of the large British warehouses a load of Danish bacon came in. The manager told me that while some of our Canadian bacon was good, some of it could not be sold at a paying price. We need to send a bacon in which the fat is solid, the lean mellow, and that has no salt on the outside. I think that the quality of the Danish bacon is due largely to the kind of hogs raised and to the feed. One farmer whom I visited on the island of Zealand was fattening his hogs last summer with green clover and meal. I think the feeding of clover has a good deal to do with this mellowness in the lean meat of the Danish bacon. The pigs are graded at the slaughter houses. A farmer with whom I stayed a couple of days pointed to a pig among a lot which were being sent to the slaughter house, and said : "There is a pig that will grade only No. 2." I asked him why, and he answered : "Because he is too broad and fat." Their No. 1 hogs are what we would call in this country about half fat. The bacon is put up in a nice linen cover, and is well-protected from dirt.

I think we should have a distinct Canadian package for all our first-class dairy products. In the eyes of a Britisher all that is associated with a good name is connected with the package in which he buys his goods. I believe that if we had a good package for our cheese, butter and bacon, which was distinct from all other packages, and at the same time made up a good, uniform article, it would be thousands of dollars of gain to this country annually. I think we ought to have butter exhibitions, like they do in Denmark. They have about twenty of these exhibitions every year in that country. The chemical division of the Experiment Station at Copenhagen call in a number of experts who test the butter obtained from creameries and dairies—three sets of judges make the examination and each set goes over the butter once—three times in all. The butter is scored by the judges, and the results are sent back to the maker.

I think it is possible to develop a trade in tinned butter. The Danes do a large business in that line. I believe that there is also a good opening for a large business in condensed milk. We import $25,000 of fancy cheese for our city markets. I do not see why we cannot make that fancy cheese at home I did not see a Cheddar cheese exposed for sale on the continent of Europe. They handle fancy cheese which workingmen can hardly afford to buy. I regret that the lateness of the hour will not permit me to point out some more of the interesting and suggestive facts noticed by me in the dairy countries of Europe.

IN MEMORIAM.

A resolution of condolence was passed to the surviving relatives of the late J. B. Harris. His wise and helpful services to Canadian dairying the past were referred to in eulogistic terms by Mr. Whitton and Prof. Robertson.

After a few hearty words from Messrs. Smith and Owens, of Campbellford, and cordial thanks to these gentlemen for their splendid work in assisting the Association, the convention adjourned.

DAIRYMEN'S ASSOCIATION OF WESTERN ONTARIO.

OFFICERS FOR 1896.

Honorary President	THOMAS BALLANTYNE, Stratford.
President	A. F. MCLAREN, Stratford.
1st Vice-President	JOHN. S. PEARCE, London.
2nd Vice-President	HARCLD EAGLE, Attercliffe Station.
Directors:	
Division No. 7	JOHN PRAIN, Harriston.
Division No. 8	J. N. PAGET, Canboro'.
Division No. 9	ANDREW PATTULLO, Woodstock.
Division No. 10	THOS. GIBSON, Fordwich.
Division No. 11	R. M. BALLANTYNE, Stratford.
Division No. 12	J. W. SYMINGTON, Camlachie.
Division No. 13	H. WHITE, Hawkesville.
Secretary-Treasurer	J. W. WHEATON, London.
Inspector and Instructor	T. B. MILLAR, London.
Auditors	J. A. NELLES, London. JOHN GEARY, London.
Representative to the Industrial Fair, Toronto,	J. W. WHEATON, London.
Representatives to the Western Fair, London,	JOHN GILMOUR, Nilestown. ROBT. ROBERTSON, London.

NINETEENTH ANNUAL CONVENTION

OF THE

DAIRYMEN'S ASSOCIATION OF WESTERN ONTARIO.

To the Honorable the Minister of Agriculture :

SIR,—I have the honor to submit herewith the nineteenth annual report of the operations of the Dairymen's Association of Western Ontario.

The season of 1895 will be remembered as a most trying one for dairymen. The price of cheese was about one and one-half cents per pound less than in 1894, which would mean a loss of about $750,000 to the dairymen of Western Ontario. The season was also characterized by a severe drouth in many sections, which materially affected the flow of milk, and caused many of the smaller factories to quit operations before the season was much more than half through.

Included in the report for 1895 are detailed accounts of the Directors, Secretary, and Inspector's work, which, together with the annual address of the President, give the operations of the Association during the year, and the condition of dairying in Western Ontario during the same period. They show that winter dairying is being continued by all the factories, which commenced that branch a few years ago, and that the number of cheese factories making butter during the winter is increasing; that there is need of more uniformity in the quality of western cheese and of more uniform methods of instruction and inspection than have been carried on heretofore. The number of persons prosecuted for tampering with milk is shown to be larger than in 1894, thus furnishing a proof of the necessity of paying for milk for cheese-making by the butter-fat system. One of the difficult problems in our factory system is shown to be returning the sour whey to the patrons in the milk cans, and the best plan of conducting the selling of cheese at the various dairy boards of trade is given considerable attention. These reports also show that very effective work was done by the Association in educating dairymen and farmers by a number of successful local conventions and meetings held during the year.

The nineteenth annual convention of the Association was held in the town of Woodstock on January 7th, 8th and 9th, 1896. Though the interest in dairy matters, owing to the low prices, had declined somewhat, the attendance at this gathering was far in excess of other years. In fact, it may be safely claimed for this convention that it was

the largest and most influential gathering of dairymen ever held in Canada. The addresses were practical, covering nearly every phase of dairying. A *verbatim* report of these addresses is included herewith, and the discussions upon them given in full.

The continued recognition of the Association's good work by your Department during the year, in making liberal grants to meet the heavy expenditures which such work must entail, merits the sincere thanks of its directors and members. In anticipation of your continued good favor it will be the aim of the Directors and officers of the Association to expend, as heretofore, all future grants in the best interests of dairying in Western Ontario.

All of which is respectfully submittted.

J. W. WHEATON,
Secretary.

London, Ont., February 15th, 1896.

NINETEENTH ANNUAL CONVENTION

OF THE

DAIRYMEN'S ASSOCIATION OF WESTERN ONTARIO.

WOODSTOCK, January 7th, 1896.

The President took the chair at half-past one, and after a few introductory remarks expressing the hope that the convention would be one of the most successful yet held, he called upon the Secretary to read the annual report of the Directors, which was as follows:

DIRECTORS' REPORT.

GENTLEMEN,—Your Directors for 1895 beg to report as follows: During the past year we have endeavored to carry on the varied work of the Association in our charge with vigor and efficiency. But in spite of our earnest efforts and united desire to further the interests of the dairy industry to the utmost extent, there is some work unfinished, and much that requires to be done during the coming year. And here we might state that the executive work of the Directors is, like the number of cheese factories and the variety of interests connected with the dairy, increasing year by year.

We had early in the season a circular sent out to factorymen outlining the policy and work of the Board for the year, which seems to have had a beneficial result. The usual work has been done by the Secretary and officers of the Association in attending meetings of dairymen.

The stimulating effect of local conventions held under the auspices of the Board continues to be apparent. The results are such as to warrant a continuation of this means of educating patrons in districts that do not come so directly under the influence of these large conventions. The demand for such district meetings has been such that we have not in every case been able to acceed to requests made upon us for them. During the past year most successful gatherings were held at Strathroy, St. Thomas, Simcoe, Kincardine, Harriston, Flesherton and Newmarket. These names suggest the extent of the operations of this Association and the demands made upon its activity. Your Board has received valuable assistance from local dairymen in making these meetings successful, and also from the Superintendent of Farmers' Institutes in the way of speakers. In addition to the talent ordinarily available your Board were fortunate in securing the services of Mr. J. H. Monrad, a well-known authority on dairying.

We have also continued the system of special instruction through Mr. T. B. Millar, during the early part of the season before the regular work of inspection begins, as during the previous year, and with good results. He spent two days each with no less than twenty-seven factories so located as to be within easy distance of almost every cheese factory in western Ontario.

During the hot season there was an increased demand for inspection and special instruction, a demand which the Board for 1896 should endeavor to provide for. In this connection we would urge upon your attention the fact that the work of inspection and instruction is now perhaps the most important that your directors have to deal with. And we would suggest that this convention should give some indication of the feelings of factorymen on the subject. We are of opinion that the whole of Western Ontario

should be organized into districts or groups of factories, over which competent inspectors should be placed. This can only be done through the co-operation of factories with the Board of Directors of this Association. We urgently press this subject on your attention. A committee of the Board had the subject under consideration for some time past, but a solution has not yet been arrived at. It will have to be dealt with by the new Board for 1896.

We beg to report that the usual grant of $100 was made to the Western Fair, also a grant of $50 to the Industrial, and a new grant of $50 to a dairy department inaugurated in connection with the Provincial Fat Stock Show at Guelph. This latter amount was in conjunction with a like amount from the Agriculture and Arts Association, and with donations from private individuals, including your President and Secretary. A test of dairy cows was held in connection with the Guelph show.

During the Industrial Fair a joint meeting of your directors with the directors of the Dairymen's Association of Eastern Ontario and of the Ontario Creameries' Association was held in Toronto. It was there proposed by members of your Board that the latter body should re-unite with the two Dairymen's Associations, it being generally felt that the three associations are now doing almost identically similar work. But, although the suggestion was discussed at length, no agreement was arrived at.

This meeting of the representatives of the three Associations was opportune, as a report had just been circulated by a prominent agricultural journal in Britain to the effect that adulterated Canadian cheese was being sold in the English market. A strong denial of this absurd and false rumor (since apologized for by the journal in question) was drawn up as follows:

"Moved by Mr. Thos. Ballantyne, Stratford, and seconded by Mr. E. Kidd, North Gower, President of the Eastern Dairymen's Association, that the Directors of the Ontario Creameries' Association and the Eastern and Western Dairymen's Associations, in joint meeting assembled, having read the report in the press that adulterated cheese from Canada has been sold on the British market, take this opportunity of denying emphatically that any adulterated cheese is manufactured in Canada, and of declaring that we know the said report to be wholly without foundation. This meeting expresses its regret that such an untruthful report spread abroad to work serious injury to the cheese trade of this country, should have been circulated, and hereby requests that copies of this resolution be transmitted to the Minister of Agriculture at Ottawa, to the High Commissioner at London, and to the Dairy Commissioner for Canada."

The wide publication of such a resolution, coming from the official representatives of the three dairy organizations of the country, no doubt had the desired effect of preventing misapprehension where your interests might be injuriously affected.

The statement of the financial affairs of the Association will be laid before you by our Treasurer, from which you will find, we believe, that the business of the year has been carried on efficiently, as well as with as great regard for economy as the varied work and interests of the Association would permit.

We regret to say of the past season that it has been one of great difficulty and discouragement, both to patrons, to makers and to dealers engaged in the trade. Low prices, hot weather, lack of fodder, and bad water combined to increase the difficulties and lessen the profits of the business. In this connection we have still to deplore the custom, far too prevalent, of sending back whey in the milk cans, a custom which this convention should endeavor to devise some means of doing away with; also, the fact that the system of paying for milk according to quality, as shown by the Babcock tester, has not yet been universally adopted.

We have here touched briefly on a few of the salient features of the work of the Board for the past year. In conclusion, we beg to say that we have endeavored to provide as excellent a programme for this convention as possible, and trust that it will be as successful as any in the past, and that the dairy industry during 1896 will be more prosperous than in the season which is now closed.

Wishing you a happy and prosperous New Year,

We remain, on behalf of your Board of Directors for 1895,

ANDREW PATTULLO, President. J. W. WHEATON, Secretary.

SECRETARY'S REPORT.

GENTLEMEN,—I have much pleasure as your Secretary in presenting my report for the year 1895.

The year has been characterized by the usual vigor on the part of the Association and its officers in carrying on the work. The various branches of the work have been made as effective as possible in promoting the welfare of the dairy industry in Western Ontario.

The number of annual and local dairy meetings attended was not so large as the year previous. The larger number of local conventions held served, in a measure, to lessen the need for smaller gatherings; besides, the constantly increasing duties in connection with the office work of the Association prevented attendance at several meetings. The low prices of the past season having dampened dairy enthusiasm considerably, there was not the usual demand for attendance at meetings last fall. There is still, however, a demand for attendance at annual meetings, and several requests have been received recently for some one to address the patrons.

Local and annual meetings were addressed at the following places during the year: Walsh, St. Williams, Vittoria, Kintore, Alberton, York, Canboro, Rockford, Villa Nova, Bothwell (two meetings), Glencoe and Embro, where a meeting of factory representatives was held in November. Besides, addresses were given at the annual conventions of sister Associations in the Province, at the local convention and two addresses at Farmers' Institute meetings during March. A word in regard to the advisability of continuing this line of work. It is claimed that as the cheese industry has been sufficiently developed there is no further need for continuing this work. I heartily concur with the first part of this claim, and am thoroughly of the opinion that the cheese industry of this Province, and in fact of the whole Dominion, has been sufficiently "boomed," and that it would be a serious mistake on the part of the Association to make any extra effort to extend this industry or to increase the annual output of cheese. Special attention should, however, be given to keeping up the quality, and this can only be done by every one connected with the industry doing his best. The patron should be educated as to the proper care and handling of milk for cheese making; the best means of disposing of the sour whey; the butter-fat system of paying for milk; and several other important features of dairying, and one of the best means of bringing this about is by reaching him at annual or local meetings. For this reason I think the holding of local meetings should be encouraged in the districts where factories are in operation.

Seven successful local conventions were held at Strathroy, St. Thomas, Simcoe, Kincardine, Harriston, Flesherton and Newmarket. Invitations for local conventions were also received from Walkerton and Elmira. These meetings were held as early in February as circumstances would allow, but, unfortunately for the northern dairymen, the snow blockade came, rendering the roads in many places almost impassable. In fact the Kincardine meeting had to be postponed because the speakers could not get within thirty miles of it by rail, and some of us who attended the postponed meeting have a vivid remembrance of a thirty mile ride over drifts and pitch holes to catch a train that we didn't catch. The attendance at all these meetings, however, was an improvement on that of former years.

Owing to the difficulty of securing competent speakers here who would be available to address these gatherings, Mr. J. H. Monrad, of Illinois, was engaged to address the seven meetings. The wide practical experience of Mr. Monrad in dairying in Denmark, New Zealand and America made his addresses of special value to the dairymen who were privileged to hear them. The Association is indebted to the Superintendent of Farmers' Institutes for the Province who arranged for Prof. Harcourt to address these local gatherings. His addresses were also of much value from a dairyman's standpoint. Others who rendered valuable services at some of these meetings were the President of the Association, Prof. Dean, J. S. Pearce, A. F. McLaren, Wm. Dickson, W. C. Shearer, T. E. Young, D. Leitch and Harold Eagle. Considerable interest was taken in these meet-

ings by the local dairymen and citizens of the towns in which they were held, who in every case assumed the responsibility of advertising. The holding of local conventions might to a certain extent be continued for the same reason that local meetings should be held.

Two visits were made to factories to inspect milk where the inspector could not attend. Assistance was rendered at one factory where the paying by test had been adopted for the first time. A number of other factories were visited during the season when opportunity would allow, and where no extra expense would be incurred.

The office work of the Association is every year increasing, and the correspondence is becoming a most important part of it. During the year, 862 letters were received, and as many written in reply to these, and in connection with the Association's work. There have been more letters received asking for information on some practical feature of dairying. This is a phase of the work that should be encouraged, as it will be the means of making the Association of more practical benefit to dairymen.

Early in the year I received instructions from the Directors to purchase a Mimeograph for use in the office. This has proved to be a profitable investment, and already about enough has been saved in the cost of printing to pay for it. It was particularly valuable in connection with newspaper work. Some twenty different articles were written, giving reports of Directors' and Executive meetings, notes on the Association work and some practical features of dairying. From fifty to sixty copies of each article were run off and mailed to as many local papers circulating in the dairy districts. These articles as far as we can make out were published in nearly every case by the paper to which they were sent, and served to bring matters of importance before dairymen, and to keep the Association and its work before the public in a manner that could not otherwise have been done. At the beginning of the season 1,000 four-page circulars, setting forth the work to be carried on during the cheese season, were mailed to the makers, salesmen of factories and members of the Association. Six thousand programmes, containing thirty-two pages, were issued at the beginning of the year to advertise the Stratford convention. Enough funds were secured from advertisements to pay the cost of printing and distributing. Six hundred invitation circulars were sent to the dairymen in December inviting them to be present at this convention.

In answer to a number of questions sent out to factory men, 113 replies were received. From these a lot of valuable information of a more or less statistical nature was secured, and we have taken the trouble to compile it in this report.

These returns show an average of over eighty-three patrons and 526 cows for each factory, which is considerably higher than last year. This would be an average of over six cows to each patron, and if 350 be taken as the number of factories, there would be a total of 29,050 patrons supplying the milk of 184,100 cows to the cheese factories of Western Ontario, a considerable increase over the previous year. The largest amount of money received by any patron per cow for the season of 1894 was $65 and the lowest $6, the average being $23.34, which was $2 51 per cow less than in 1893. The amount of money any patron receives per cow depends in some measure upon the length of time the factories run and the cost of running. At the factory to which the $65 per cow man sent, the smallest amount received was $27 per cow, and where the $6 per cow man sent, the largest amount received per cow was $30.04. If 184,100 be taken as the number of cows, the estimated value to patrons of the cheese made in 1894 in the district looked after by this Association, would be $4,296,894. The average price paid per 100 pounds of milk to patrons in 1894 was 73.63 cents, ranging from ninety to sixty cents per 100 pounds. The average number of pounds of milk to make one pound of cheese was 10.76, varying from 11.45 to 10.18. There was an average of sixty-one and a quarter tons of cheese made in each factory, ranging from nine to 245 tons, and taking 350 as the number of factories, would make a total of 42,875,000 pounds of cheese made in Western Ontario in 1894.

The average price paid to cheese-makers per 100 pounds of cheese for making last season, all furnishings included was 80.64 cents, ranging from 70 to 92 cents, and where

boxes were not supplied the average was 62.44 cents, varying from 70 to 55 cents per 100 pounds of cheese; the average where only labor was supplied was 38.75 cents per 100 pounds of cheese and $43.25 per month. The cost of manufacturing to patrons, including milk hauling, averaged $1.99 per 100 pounds cheese, varying from $1.15 to $2.50, and the average cost where milk was delivered ranged from 95 cents to $1.50 per 100 pounds cheese and averaged $1 11. The average cost of hauling milk was 7.6, varying from 3.3 to 12 cents per 100 pounds.

The data obtained referring to the butter-fat system of paying for milk are somewhat similar to those given in last year's report. There was a falling off in the number of factories using the test last year. This reduction was due to various causes, one of the important reasons being that the patrons at many factories did not wish to pay anything extra for testing, and as the maker in many cases did not feel disposed to do the work for nothing, the test was discontinued. Though it is nothing but just that if the maker has any extra duties to perform he should receive more pay, yet I am of the opinion that it will pay the maker to do the work for nothing rather than have the system discontinued, as it will insure him a better quality of milk delivered at the factory. There are other reasons that might be given why the butter-fat system has been discarded at many factories, but as these will probably be discussed at a later part of the convention I will not discuss them here.

Paying by test has not been agitated very much during the past year among dairymen, and consequently many of them have come to the conclusion that the thing is a kind of "dead letter." But such is not the case. Too many have made the mistake of expecting from its adoption absolute justice. It should, however, be considered in a relative sense only. When we compare it with the "pooling" system there can be no question but that the butter-fat system is more nearly in accordance with justice. The returns from the factories show that the average number of pounds of milk to make a pound of cheese in 1894 at the factories where the test was in operation was 10.703, while the average at the factories where the pooling was used was 10.817. These figures furnish a strong argument as to the effect the system has in keeping up the quality of the milk. There was during the year a large demand for inspection of milk at the factories and some of the applications were from factories where the test system had been discarded. If the discontinuing of the system makes it necessary to call in the inspector, another strong argument is furnished why paying by quality should be adopted in every factory.

The butter-fat system of paying for milk for cheese-making is one of the most important questions before dairymen to-day, and I would ask everyone connected with the industry, and especially patrons and factory managers, to consider the system carefully as to its power to bring about the following:

(1) A richer quality of milk.

(2) A better flavored quality of milk.

(3) To remove the temptation to add water or to take the cream off milk supplied to cheese-factories.

(4) To render to each patron more nearly the actual value of his milk than the old "pooling" system.

(5) To put the apportioning of dividends at cheese factories on a sounder and more accurate basis.

These returns also show that 77 per cent. of the factories return the sour whey to the patrons in the milk cans; that 15 per cent. do not return any whey; and that 8 per cent. partially return it. If the practice is detrimental to the making of really fine cheese these figures show that the bulk of the factories in Western Ontario are far from having the most perfect methods of carrying on the business. The average price received for whey sold at the factories was $4.13 per ton of cheese, ranging from $2 75 to $6.40 and 85 cents for the whey from a standard of milk varying from 35 cents to $1.75. At these figures, everything considered, patrons will receive as much if not more value than in having the sour whey returned and will not run the risk of having the cheese injured by

the sour whey flavour. Where the whey is not returned, everything considered, the cost of hauling milk is less. The average cost of hauling at the factories where the whey was not returned was 6 3-5 cents per 100 pounds of milk, while the average cost where the whey was returned was 8 3-10 cents, a difference of nearly 2 cents per 100 pounds, or about 25 per cent. less.

From these returns it is also found that the average length of time the factories were in operation in 1894 was 6¼ months, ranging from 3½ to 12 months. The factories running all the year made butter during the winter. The average length of the milking season for the patrons was about 8 1-5 months, varying from 6 to 11 months. These returns also show that at only about 86 per cent. of the factories was supplementary feed provided for cows during the summer, and at only a very small percentage of these factories was such feed grown by all the patrons. The kind of feed grown for this purpose was chiefly oats and peas in the earlier part of the season and corn later on.

The value of factories' building varies from $200 to $6,500, showing an average of $2,070. Taking 350 as the number of factories, this would give a total value of $724,500 to the cheese factory buildings under the jurisdiction of this Association. About 48 per cent. of the factories are owned by private persons and about 52 per cent. owned and operated by the patrons.

The number of factories that applied for and received visits from the inspector was not as large as in 1894. There was, however, a larger percentage of applications for milk inspection only. In fact for a week or two during the very dry weather there was such a rush of applications for the inspector that several men might have been employed to do nothing but look up and prosecute patrons for skimming or watering milk. Though it is nothing but right that patrons guilty of tampering with milk should be punished, yet it would be better for the factories concerned, better for the patrons and bettter for this Association if all milk for cheese-making were paid for according to its quality. In fact, since there is at the disposal of every cheese-factory a practical and just method of paying for milk according to its quality, I am somewhat of the opinion that this Association would be justified in refusing to inspect milk at all, and in limiting the work of its inspectors to giving instruction in cheese-making only. If this were done, there is no doubt that more factories would be compelled to adopt the test system, and the efforts of the Association could be directed more to keeping up the quality of the cheese.

This leads me to the question of having a standard quality in our Western cheese. There are factories in our district which make us fine quality of cheese during the season as is made in Canada, but there are other factories where the quality of the cheese made is far below that of the best factories. These inferior goods in many of our factories injure the sale of the superior goods of our best factories. If all the cheese made in Western Ontario were of a superior uniform quality throughout, better prices would obtain. Therefore I think that the efforts of this Association and of every dairyman in this western district should be directed during the next few years to bringing this about.

This question is now being considered by your Directors, but as I have been giving the matter considerable personal attention during the past few months I will take this opportunity of presenting to you what I consider to be the most practical means of bringing about a greater uniformity. To secure a uniform product there must be uniform instruction and uniform methods of making. There are, as already stated, about 350 factories in Western Ontario. If these factories were arranged in groups or syndicates of from twenty-five to thirty each, and a competent instructor placed over each syndicate to visit each factory regularly, say once a month, and if a well-equipped instructor or inspector-general were employed to look after the syndicate instructors and be responsible to the Association for their work, we would have a feasible and comprehensive scheme for bringing about a more uniform product. To finance such a scheme would require more funds than the Association has at its disposal, and unless the factories would co-operate and contribute to its support, it could not be put in practice. It has been suggested by a person interested and thoroughly competent to judge, that if the factories would contribute enough to pay the salary and expenses of the syndicate instructors the Association should

pay all expenses connected with the inspector-general, with organizing the syndicates, with managing the finances of the whole scheme, and become responsible for the men employed throughout. This, I think, would be a fair division, and all that the factories would have to do would be to pay into the treasury of the Association their share, or become responsible to the Association for it.

It is somewhat difficult to give an accurate estimate of what the factories would have to pay. A safe estimate I think would be about an average of $25 a factory, which is not a very large amount considering the benefits to be derived from the investment. This rate would give about $8,000. But it would not be just to tax every factory alike. A rate levied upon the quantity of cheese made would be fairer. By taking our estimate as above of the quantity of cheese made in Western Ontario and striking a rate of forty cents per ton, it would supply sufficient funds to carry on this work, but it would have to be modified by making a sliding scale of prices according to the size of the factory. If all the patrons of cheese factories looked after by this Association were to become members of it we would have an annual revenue of over $14,000 from this source alone, and this would only mean fifty cents apiece; or if every patron would pay in twenty-five cents there would be an annual revenue of over $7,000, which would enable this syndicate scheme to be carried out by the Association. This is in brief the outline of a scheme for more uniformity in cheese production; and if any such scheme is contemplated it should be under the entire control and management of some central organization. It would defeat the object in view to have independent syndicates formed, as there would be only local uniformity, and what we want is uniformity of product throughout Western Ontario.

It would not be possible to carry out such a scheme as this in its entirety all at once, as the patrons would need to be educated to it; but a beginning might be made by organizing one or two syndicates on trial for next season, of factories that could be induced to go into it, and if the plan were successful, others would soon fall into line.

The syndicate system of instruction is largely developed in Quebec, and is the reason why that Province is so rapidly coming to the front with respect to the quality of its cheese. In 1893 there were twenty-eight syndicates in Quebec. Each syndicate has its own instructor, and there are two general inspectors who look after them. The estimated cost for syndicate instructors (salary and expenses) ranged from $475 to $600 for the season. The cost here would probably be higher. The Quebec Government makes a grant to each syndicate not to exceed $250 per annum, so that the factories in a syndicate would have to pay about $300 all told. The Dairy Association of the Province also receives a grant towards paying for head inspectors. Each syndicate manages its own finances and pays its own instructor, who is looked after by the Government or Association instructor or inspector. It would, I think, be better to have all the syndicates managed and controlled by one central organization, and this Association seems to be well equipped at present for undertaking such work if the factories would agree to pay their share of the necessary funds. Gigantic as such a scheme may appear at first sight, it furnishes a means by which the efforts of this Association and the efforts of our dairymen may be turned to practical account in improving and bringing about a greater uniformity in the quality of the cheese made in this part of the Province.

The membership of the Association last year was 468. This is a decrease of 126 as compared with the previous year, and may be accounted for from the fact that the number who joined at the Stratford convention was just 100 less than the number who became members at the Ingersoll gathering the previous year, though the attendance at the former gathering was somewhat larger. Besides, as there were not so many meetings attended, there was not as great an opportunity for securing members. If all those who have become members since I became connected with the Association would continue their membership every year, there would be now a membership of about 2,000. There are only about 150 who can be relied upon to continue their membership from year to year. This is a very small percentage of those whose duty it is to become members. Last year I took the trouble to send out a post card to the members for 1894 who had not joined in 1895, requesting them to send in their membership fee for last year. From over 300

reminders sent out, only fifteen responses were received enclosing membership fees for 1895. From this it will be seen how difficult it is to keep up the membership of the Association without coming in contact with the dairymen, and even then it is difficult to get members.

A list of cheese makers in western Ontario is kept on file, with addresses corrected as far as possible up to date. This list contained 293 names last year. There are still a number of makers whose names are not on this list whom we have not been able to locate definitely. All those who think they are not on will confer a favor by sending in their names and addresses, as it is important that the list should be as complete as possible. Whenever an address is changed we shall deem it a favor if makers will notify us.

There are a few minor matters connected with the Association's work that might be considered with profit here, but as this report is already too long I will not occupy any more of your time.

Again thanking the Directors and members of the Executive for their continued kindness during another year, I am,

Your obedient servant,

J. W. Wheaton, Secretary.

Mr. John Blayney: There is no doubt in my mind that the system of paying for milk by the Babcock tester is a right one. The great trouble is to put it into force. I am going to say a few words from the patron standpoint. It is a well known fact to all men who have been engaged in the cheese business for the last year, that the profits to the patrons have been very small, and in some cases nothing at all. Here comes the difficulty. If the cost at the cheese factories is to be borne by the patrons principally, and the patrons realize no more for the raw material at the factory, it is a question to be reasoned out by the patrons which is the greate evil—the pooling system with a few dishonest patrons, or the Babcock system with the extra expense thrown upon the patron? It is a question to be reasoned out, I say, which of the systems would give to the honest patron the most money. As far as I am individually concerned I would not object to a trifle more expense under the Babcock system, but I am only an individual. We had the matter discussed at the cheese factory that I supply milk to, and I found that a large number of patrons were very much afraid of the Babcock system. I have always taken it for granted that the honest patron need not be afraid of any system that would give to all men what they really should have, and no more. There is no doubt in my mind at all that if the patrons become satisfied that they gain nothing at all by sending dishonest milk to the factory that they will very soon cease to do so. There is another thing I noticed, and that is the necessity of improving the quality of cheese. I believe it is in the interests of the patron that every factory should turn out the best possible article. As we largely depend on the export market, and all men who know anything about the export market know that it is the finer qualities that secure the price, I consider all men who are in any way interested in the cheese business are in the same boat. We should all aim to furnish the cheese maker with the best possible milk, and then, of course, we shall expect him to make first-class cheese.

PRESIDENT'S ADDRESS.

Mr. Andrew Pattullo, President of the Association, gave the following address:

I would just ask your permission to take the opportunity of reading a few of the observations that I have to make to you in order thereby to be a little more brief and concise than perhaps I would be if I spoke as I usually do on public matters. In the first place I regret very much that I have to remind you that the past season has been an unusual one in the cheese industry. It has been, in fact, one of the most trying, if not the very worst, both for producer and dealer in the whole history of the trade. I propose

in the few observations which I shall address to you to-day to make some quotations from my remarks of last year at Stratford, because nearly everything said on that occasion has quite as much force applied to present conditions as it had then. In our discussion of practical topics, the addresses and papers given are of necessity very largely a repetition of old truths, sometimes in new and improved form. But this fact does not render their repetition the less important or necessary. And so with all the lessons which we must draw from experience. They cannot be repeated too often until they are learned and acted upon. Last year I said :

"It can be claimed for the dairy industry that since it became of importance to the country, the price of cheese has, with the possible exception of a single year, afforded a margin of profit to the producer, while the average of profit has been extremely good. This is a remarkable fact, during a period when nearly every other product of the farm has fluctuated in value, if it has not become permanently low."

I fear that this statement, so gratifying then, can no longer be repeated. If the price of cheese has not fallen below the point of profit, it has come so near it as to make the situation serious. In newer districts and in those not specially adapted to cheese making, profits have probably been turned into positive losses. This at least seems to be the opinion of many producers who have either made the past a short season or gone out of the business altogether. The cause of this unusual condition of affairs deserves your serious attention and study. Some of them are clearly beyond your control ; others are home-made and so obvious that their lesson is easily learned. Three years ago at a meeting of dairymen in this county, almost as large as this convention is likely to be, I ventured to warn you of the danger of over-production, urging that all our efforts in this country should be directed to improvement in quality and not to the extension of cheese making into new and enlarged areas. Men eminent in the industry then thought otherwise. Last year at Stratford I also took occasion to say :

"It is just possible that the usual interest—not quite yet a craze—excited in this and other countries by the success of our dairymen may lead to an expansion of the industry to the point of danger ; and that from influences already in motion here and elsewhere we may see a marked fall in the price of cheese as in other products of the farm—a contingency which our dairymen should not lose sight of. However this may be, it is clear that all our efforts, especially all governmental efforts, should now be directed to raising the standard of quality, to the holding and improvement of the position we already have in the markets of the world, rather than to an extension of the area of cheese-making operations.

The danger has come sooner even than anticipated. We are now suffering from over-production. The world is making more cheese than our solitary market, Great Britain, will consume at such prices as have prevailed in the past. Still, we have been using the resources of the country to force production in many directions. And in this connection it is worth reminding you that the situation might have been much worse. It would have been, for instance, if United States exports of cheese had continued normal instead of declining. Then again the production of cheese in the Antipodes has suffered a check through more than usually severe drouths. These two dangers have thus been minimized during the past year. But still we have suffered and found profits vanishing for the first time in almost a generation. We too have suffered a check and have got to low prices which may continue. The lesson is obvious. Let expansion cease, and let all our efforts, official and other, be directed solely to the improvement of quality. We cannot change outside conditions. We can neither stop production abroad nor raise prices in Great Britain. But we can defeat competition by superior quality—and thus minimize, if not remove, the effects of increased or over-production.

Some other advice given you last year seems also to be even more important than it was then. I refer to the obvious advantages of selling cheese at our markets promptly when ready to ship. The experience of last year, as of the year before—and, indeed, of almost every year in the history of the trade—proves that by following this rule the producer will be the gainer, and that all the interests of the trade will be promoted. Failure on the part of salesmen to act on so obviously a common sense policy has had an injurious effect on our markets, while it has frequently caused serious loss to the producer. The fact is that the "Call Board" system is becoming something like a farce. What are called our cheese markets seem to exist no longer for the sale of cheese, but to avoid their public sale. The time of buyers and salesmen is wasted by the system into which we have drifted, and the producer pays for it in the end. The condition of our cheese markets

and the practices which are growing up should receive your serious consideration. The one thing always to be borne in mind by salesmen is the absolute necessity in their own interests of getting their cheese, especially their early cheese, into consumption as quickly as possible.

On another point I fear the effect of good advice has not been very apparent. The absence of demand for fine Canadian cheese for home consumption is as clear and as deplorable as ever. This is all the more regrettable when we consider the remarkably low prices of the past year. For a considerable time fine Canadian cheese could actually have been sold by our grocers with a profit at three pounds for twenty-five cents. At such a price as this, surely it should have been a drawing card for the grocery trade. Still, home consumption does not seem to have been stimulated to any appreciable extent. There is little evidence of any active or organized effort on the part of the dairy interest to popularise and increase the demand for Canadian cheese at home. In this respect, I repeat, we ought to take a lesson from our neighbors who now rely solely on their own markets. And in another direction too we may learn a lesson from them. They have spent enormous sums of money to introduce American corn products into Europe. They have taught the people over there how to use such food, and thus have conferred a boon especially on the poor of the old world, while they have greatly enhanced the price of the largest product of the American farm. Still, we go on allowing our people to neglect the use of one of the finest and cheapest food products of this country. Those who represent the dairy interests of Canada should never allow this question to drop until our home consumption of cheese is increased tenfold.

The conditions of the markets this year, and the outlook in our own and other countries, through the increased production of cheese, present and prospective, brings the cheese-makers of this district face to face with the fact that they can now achieve continued prosperity only through a successful struggle for supremacy against new and increased competition. There will no longer be any royal or easy way to success in the dairy business. The whole world knows our secrets. Indeed, there are none any longer in such an industry as ours. What you have done, what you are doing, can be done by others. Unless you realize this and act upon it, you will not long retain the first place which you have held in the past and hold still. All this means simply that you cannot rest on your oars. You must improve your quality or be beaten in the race. The possibility of being forced back to second place is one which should never be lost sight of. It constitutes a danger far more real than some of your indifferent makers, non-progressive directors and careless patrons seem to imagine. Improved quality should be the watch-word of every dairyman throughout Western Ontario.

In spite of the dangers ahead and the serious discouragements of the past year, the cheese-makers of the Ingersoll district—that is, of Western Ontario—have no reason to fear the future, much less to abandon the industry. You cannot, as I have said, raise the market price in Great Britain. But there are two things you can do. One of them has already been discussed. You can greatly improve quality. In the second place, you can as greatly decrease the cost of production. Patrons and directors seem often to lose sight of the fact that if they could produce cheese at six cents and sell it at eight they would make as much profit as if they got ten cents for cheese which cost them eight to produce. Here is the whole problem of the future in a nutshell. It is the problem which you must now face. How can you, while improving the quality, decrease the present and past cost of production? Without anticipating the discussions of this convention, which should all relate to the solution of this problem, let me suggest in a brief and general way some things which you may do. You have suffered seriously during the past two seasons, and during many other seasons, from drouth, with its many damaging results and losses. Still, your patrons as a class are in the mere beginning of an adequate system of soiling and ensilage production. By better provision for fodder, both in summer and winter, by better facilities for its use through labor saving devices and otherwise, you can keep more cows to the acre and produce more milk at less cost per pound. In your factories, too many of which are very old, and furnished still with the antiquated appliances of the past, there is great room for economy and efficiency. New districts which start with new factories, new machinery, labor-saving devices, all the results of your experience and

of others, have a distinct advantage over you—a fact which it is not pleasant either to realize or to point out. But unless you do realize it you are in danger, I repeat, of falling behind. In another direction, too, you are throwing away enormous sums of money. It is no hobby with men or with others who have taken up the subject when we declare that the cost of haulage in connection with cheese factories is enormously larger than it should be. With improved roadways you could greatly decrease it, and thus add to the profits of your factories—to what extent I shall not stop to discuss. But the unnecessary waste through bad roads will certainly amount, even in the most favored districts, to a considerable fraction of a cent per pound in the cost of making cheese. In some sections this waste in excessive cost of haulage is so great as to almost wipe out the profits of the producer. Still dairy farmers do not seem to be exerting themselves for improvement in road construction as they ought. At a meeting of dairymen at Embro recently from various sections, a resolution was passed deploring the excessive loss to the cheese-making industry through bad roads, and calling upon the councils of several municipalities to take steps to improve them. But systematic and organized effort in this direction has still to be seen among the dairymen of Canada—who ought to be the most enlightened and progressive in this as in other matters relating to agricultural progress. I repeat and emphasize the assertion, that next to quality the future of cheese-making in this and every other district of Canada now depends on decreasing the cost of production through modern ideas and progressive methods.

But there is one way in which you should not seek to decrease the cost of production; that is, by grinding down the makers to wages that will leave nothing as the reward of honest effort and successful skill. Last year I took occasion to say on this point:

"The cheapest cheese-makers are the dearest in the end. We are demanding not only greater experience but special training at the dairy schools from the makers in these days. While the supply of men who are willing to take factories may cut down the price of making, it will be found in this, as in other industries, that to secure skilled and superior intelligence we must offer the incentive of a just, if not a liberal reward for honest, intelligent and successful effort The tendency of which I speak seems greatest in the older sections, which are in danger of losing their best men through inducements offered them by the newer districts and by other provinces or countries anxious not only to begin right, but to win in the race for supremacy."

Here again I fear it must be confessed that it is easier to give advice than to secure its being acted on. Instead of an improvement in this respect, so far as I can learn, there has been a positive retrogression. Competition among makers, who are swarming into the business from the dairy schools, has enabled directors in many places to cut down the price paid to old and experienced men, or to engage new men often inferior to them. Probably the low price of cheese has created a new incentive to such a penny-wise and pound-foolish policy. On the contrary it should afford a most clear and potent reason why the very best makers alone should be engaged and why they should be paid more liberally than ever. I repeat the warning of last year, that unless the makers of this district are more liberally treated than in the past, you are in danger of driving the best of them into other and newer districts, which are your rivals and which in time will surpass you in quality in the British market. In view of this clear and serious danger the patrons should consider whether it is true economy on their part to demand of directors that they engage the cheapest makers rather than the best ones at a liberal price for making. If the present tendency is to go on it would be much better to close up our dairy schools. The class of young men who are going through these institutions will not work for nothing even in the pioneer dairy district. If they can't get adequate payment for their skill, hard work and experience in this district, we are simply providing skilled men who will be our rivals elsewhere—probably in the United States or other countries. There is, and I emphasize the statement, no economy in cheap makers. And in this connection I am glad to see that the makers are coming to the front and asserting themselves in the associations and conventions. No industry

ever thrived without adequate encouragement to special talent. And quality in the Ingersoll district will not survive much more of the baneful tendency which we have seen in the engagement of cheese-makers.

Allow me also to especially draw your attention to a paragraph in the annual report of your Directors. I refer to the vexed question of carrying whey in milk cans. This practice is a menace to all effort for the improvement of quality, and one which must be removed Our sanitary laws interfere with what may be called the liberty of the people—that is, the free action of those who are willing to do injury to others—in many directions. They prevent the pollution of wells, of streams, of our own premises, and the lanes and streets of our towns and cities. Still, we allow slovenly cheese factory patrons to pollute the vessels in which is carried the most susceptible and easily tainted of all our natural food products. Now I am not prepared to urge the stoppage of this vicious system by law, because we are sometimes inclined to seek relief from legislation and to get too much legislation, where we are perfectly able to help ourselves without it. It will be readily conceded that every patron has a right to get his whey back from his cheese factory if he can make arrangements with his management to do so. But I contend that he has no right, no moral right—and he should have no legal right—to injure a natural product from a hundred or more other patrons, by a filthy and vicious practice which every experienced and progressive dairyman in this country, and in the world, condemns to-day. Neither one man, nor any number of men, should have the right to introduce filth—or, it may be disease—into the common pool of milk to which scores of cleanly and conscientious neighbors contribute. Therefore, I contend that if reason, whose voice is heard on this point from our best teachers at every dairy meeting in this country, cannot influence the patrons in this direction, the sinners should be told that if they must have their whey back from the factory, they shall not carry it there in cans intended solely for pure milk. Bear this in mind: you will never improve your quality in this district, nor will you long keep ahead of other districts, until you settle this problem in the interests of the cleanly and conscientious producer of milk.

Another question referred to by your Directors is the work of inspection. I regret that during the past season we have not been able to arrive at a solution of what will be the most important problem before your Board of Directors for the coming year. The experience of the leading men in the trade who have thought most on the subject leads to the belief that more inspection and instruction is required at the factories throughout the season. This can only be secured by co-operation. Unless the factories throughout the western district will unite in groups, thus co-operating among themselves as well as with the board of this Association, it is not easy to see that the results aimed at will be achieved. The funds of the Association, although sufficient for ordinary purposes, are not great enough to cover our enlarged area of cheese production and to do the work of special instruction and inspection as it ought now to be done. This is one of the business questions which you should discuss and on which you should make a recommendation to the Board for 1896.

Looking over the work of this Association and of other agencies connected with our dairy interests, and the critical condition of the cheese industry at the present time, there ought, it seems to me, to be a clearer understanding of the situation and the causes which have led up to it, and also of the means by which the interests of our dairymen can be promoted in the future. To secure prosperity through wise and united efforts, there ought to be a unity of purpose and unity in methods as well. It is more than doubtful if we have got this throughout Canada at the present time. We seem to have come to a point when there should be a clearer understanding as to the sphere of duty, the area of work, for the Federal and Provincial departments and officials that are connected with the dairy industry. In some directions at least, they seem to be overlapping each other, if there efforts are not positively antagonistic. Work which in one province is being done by local enterprise and activity is being done through federal effort and with national funds in another. There should be no difficulty in all the agencies which make for progress, and which have for their common object the improvement of the

quality of Canadian cheese and its reputation in the markets of the world, uniting and working in harmony side by side. This can only be done, and obvious difficulties and dangers avoided, by Federal and provincial activity being each confined to its own sphere. The recent history of our efforts and their results must make it clear, especially to the dairymen of Ontario, that the time has come when there ought to be a clear recognition of the lines along which every agency for the promotion of the general and varied local interests of the dairy industry should work.

In conclusion, let me allude to another question discussed last year. You may remember that a recommendation was made to the Dominion Government in favor of branding cheese. After discussion in Parliament and the collection of much information throughout the country, the conclusion was arrived at that it was not well to press a bill which was brought in by Mr. McLellan during the session. For myself, although in favor of branding of cheese, I am not disposed to assert that the conclusion was not warranted by the great diversity of opinion which was developed by discussion throughout the country. Where such strong adverse opinions are held as were expressed by men in the trade, and whose judgment is certainly entitled to respect, it is better to go slowly than to proceed in haste and arrive at a wrong conclusion. The subject is of such importance that its discussion should be continued at this and other gatherings of dairymen; and it would be a great advantage in arriving at a wise conclusion if we could have the voice of dealers as well as producers, especially of those who did not agree with the finding of this Association last year.

In conclusion Mr. Pattullo alluded to the programme provided for the present Convention, and thanked the members of the Association and his fellow Directors for all the courtesy and the generous support extended to him during the past two years of office.

Mr. Blayney: I have carefully followed the President's address, and I must say that I am well satisfied with it as a whole. He must have taken a good deal of interest in the dairy business during the whole year to have considered it so minutely and so thoroughly. There is a great deal more in the words he has spoken than perhaps we can comprehend just for the time being. As I said in the few remarks that I made before, the patron and the cheese-maker and all men who are interested in the business are in the same boat We are face to face with the competition of the world as far as the export trade is concerned, and besides we are face to face with an increase of cheese-makers. I like the President's idea that we should encourage home consumption. Our cousins across the line have ever striven to increase home consumption, so much so that at present they do not rely altogether upon the export trade. It would be a grand thing if we could have home consumption—a good market at home, and an export market as well. I also like the idea that efforts should be turned to improving the quality rather than increasing the quantity of cheese produced. I think it is altogether wrong that the man who consumes home cheese should have to pay a little more for it than in the case of the export market.

The President: And get worse cheese.

Mr. Blayney: I think it is a wise policy to supply our home market first.

CHEESE MARKETS AND THE BEST METHOD OF OPERATING THEM.

Mr. J. S. Pearce, of London, then read the following paper:

This is a subject that will bear a great deal of careful thought and discussion. What is the best method of operating a cheese market? This is a question much easier asked than answered. In order that we may know something about the past methods of operation and how they were conducted, it will be necessary to go back and give a brief review of their history.

Away back in the seventies, about '72 or '73 (I cannot get the exact date), a market was established in Ingersoll, similar to one that had been already established at Utica.

The Utica market was held on Monday and the Ingersoll market followed on Tuesday. This market was merely a gathering or meeting together of sellers and buyers, and the business was conducted in a loose, irregular, indefinite and unsatisfactory manner—the buyers and sellers meeting in different parts of the room, or probably on the street corners or in some of the hotels, and making negotiations for the sale of their cheese. Sometimes it was very difficult to find out what had been done or whether any business had transpired.

Later on, the plan of having a bulletin board, with the names of the factories and the number of cheese they had to board, was adopted, and helped to facilitate matters to some extent; still the business was not just as satisfactory as it might have been, as each seller and each buyer tried as much as possible to negotiate his deals in a private way.

In the year 1876 a market was established in London. The late Mr. John Wheaton was elected president, and held that office until his death. Mr. Geo. F. Jewell was secretary, and filled that office for many years, until press of other work compelled him to give it up, and it was transferred to the present secretary, Mr. J. A. Nelles. The plan adopted by the London market was the same as the Ingersoll, viz., a bulletin board, on which the secretary boarded each salesman's cheese, with the name of the factory and the number of boxes offered. The buyers and sellers stood around and met each other —sometimes in the hall, sometimes in the arcade, sometimes in the street and very often at the hotels.

In 1892 a new feature was introduced and adopted, termed the call system, and had its regulations been lived up to by the buyers and sellers, there would have been no occasion for this paper or any discussion on this subject. How the call system is worked need not be described, as you are all familiar with this system and its working. Since the introduction of these markets at Ingersoll and London, they have been gradually extended until there are now some five or six markets held in Western Ontario, viz., London, Ingersoll, Listowel, Woodstock and Brantford; but these markets have degenerated and are now, to a great extent, a farce, owing to the fact that the salesmen do not sell on the market, but simply use the market as a feeler, using the bid offered on the market as a lever to obtain a better price either before they go home or some day after the market. This, to me, seems a great mistake, and unless some better and more rigid rules are introduced and lived up to, the markets will eventually be abandoned, and will have to go back to the old plan of doing business on the "curbstone," as it is termed in large cities. Why is this, and how is it that they have, as it were, outlived their usefulness? The cause for this lies in the fact that the salesmen have not been true and loyal to the association to which they belong, nor have they lived up to the rules and regulations adopted by each market. They have, as it were, used the market as a sort of tool, or indirect means, to try and get a better price than their neighbor.

I am sorry to say that the buyers are also not altogether blameless in this matter as they, in many instances have paid considerably more money the day after the market than they bid at the market. This has been an incentive to the salesmen to refuse the bids on the market and wait for a day or two and endeavor to get more money, and the outcome is now that the best sales have been made off the market; but, I must say frankly that in my opinion while the buyers are not blameless, the salesmen are the greater sinners and the more responsible parties for this back-sliding.

It seems a great pity that the markets could not be kept up to the standard of efficiency necessary to the carrying on of such in an honorable, business-like manner. Do the salesmen want to see markets go back to where they were ten years ago? Do the salesmen want to stand around on the streets, hotels and other places by the hour not knowing what has really been done or what prices have been offered or paid. If they are indifferent, and want to see the markets retrograde, then they cannot pursue a better plan to bring this about than the method adopted during the past summer.

As an illustration to what an extent the markets in London under the call system have become a farce, I will give the result of my tabulation of the London market during the past summer.

Seventy-one factories boarded their cheese on the London market, more or less during the summer of 1895, and twenty-nine markets have been held. During these twenty-nine markets there have been 136 actual sales made, and these have been spread over these twenty-nine markets.

There were eleven factories which boarded their cheese and made no sale on the board. There were twenty factories which made only one sale during the season. There were twenty factories which made two sales. There were eleven which made three sales. There were seven which made four sales and there were three which made five sales. One factory boarded cheese twenty-four times; three factories, twenty times; two factories, nineteen times; six factories, seventeen times; two factories, sixteen times; three factories, fifteen times; three factories, fourteen times; five factories, thirteen times; three factories, twelve times; one factory, eleven times; five factories, ten times; three factories, nine times; three factories, eight times; two factories, seven times; four factories, six times; four factories, five times; five factories, three times; six factories, twice; four factories, once.

This will give you some idea of the very unsatisfactory manner in which the sales have been conducted, and business done on the London market, during the past summer; and from what information, I can gather, I am led to believe that the other markets throughout the country are even worse than the London. I have not had time to analyse the Listowel bulletin boards, but in glancing them over, I am satisfied that the sales on that market have been even less, than on the London market, as there are some nine of these markets at which there was not even a single sale. I have not the bulletins of the other markets, but I am told that the Brantford is much better. Now, what is the remedy for all this unsatisfactory state of affairs and retrograde movement? To my mind a very simple remedy would be a resolution or agreement on the part of every salesman to sell on the market only, and under no conditions elsewhere. If this were done the salesmen would find that the buyers would then immediately bid the best price that they were prepared to offer which is not the case now. But will the salesmen do this, or have they sufficient will power to carry out such a resolution if adopted?

What would be the next best remedy? To my mind it would be the grouping of the factories into combinations or syndicates, not only for the purpose of selling, but also for more economical management in the shape of milk drawing, which is a big item in the expense of manufacturing cheese, thereby effecting a saving in the cost of manufacturing, These methods would also secure a more uniform line of goods. Our factories are said to be co-operative, but in many ways they are far from being co-operative. In fact, they are the keenest kind of competitors among themselves for the patronage of the patrons living in the neighborhood of the different factories, and in some instances inducements are thrown out for these patrons to change from one factory to another. It is not an unusual thing to see two or more milk wagons going over the same road gathering cans here and there at different intervals. Under this mode of competition all kinds of milk is taken. The cheese maker to a certain extent is at the mercy of the patrons, and should he have sufficient authority or will power to refuse or reject a can of milk, the chances are that the patron will turn around and tell him that if he will not take it, some other factory will, and the result is that the patrons become indifferent and the cheese makers are cut down in wages—all for what?

Now, there is no occasion for this unnecessary competition. Co-operation on all these lines would be of much greater advantage to every patron, and would enhance the value of his product considerably, instead of depreciating it. One great advantage of this mode of co-operation or syndicate would be the uniform quality of cheese that would be turned out from each and everyone of these factories, they of course being under the supervision of some one inspector or overseer in connection with such combination or syndicate.

Another advantage would be that one salesman would act for the entire syndicate, thereby reducing the expense of selling, and would also increase to a considerable extent the amount of money obtained at the different sales and markets, as every buyer would be willing to pay a fraction more for a large lot of cheese provided he could get it from

one individual; besides he would know that the goods would be all uniform and properly made, handled, boxed, branded, etc. In Eastern Ontario several of these combinations have been for many years in successful operation and I am informed that they are giving the very best results, and the patrons are entirely and thoroughly satisfied with this mode of procedure.

Mr. Campbell, of Brantford, is grasping my idea and falling into line. Hear what he says with regard to "How to Improve the Markets." You will find his communication in full in the special issue of the Woodstock *Sentinel-Review*, and I would advise every one of you to read it carefully:

"I believe in a local inspector, or you might call this person an assistant cheese-maker, who should be appointed by the executive officers of the Western Dairymen's Association and be in every way subject to their regular travelling inspector and who would have charge of say from twenty to thirty cheese factories, (I am not a practical cheese-maker and may set the number of factories too high) said factories to pay him according to their output. His duties would be to visit, work with, and in every way possible assist the cheese-maker in each factory to turn out the best quality of cheese, to have the cheese in each locality under his charge of one uniform grade, and by his advice and teaching, both to the local boards of management and cheese-makers, as far as possible do away with all jealousy, etc., towards each other, in a word to improve the quality to such an extent that his salary would be more than made up to those who would employ him by the advance in prices that they would receive for a number one article. All will admit that better goods than what we have can be made, that better goods mean higher prices and greatly increased consumption.

"And now as to buyers! My experience has been that when a good article is offered they never hesitate to bid keenly against each other and to pay all or more than the goods are really worth to all appearances. A cheese market or, as sometimes named, a dairymen's association, for a particular locality should have reasonable and well considered rules and regulations, and all interested buyers and salesmen should respectfully abide by and in a firm manner enforce all such rules.

"Salesmen should be carefully selected for their suitability for the position, and once installed in office, should be assisted in every way by those for whom they are working, but should not be in any way interfered with by owners or boards of management. A salesman can inform himself and judge of the situation when on the spot better than any lot of men residing miles from daily papers, telegraph offices and cheese markets. Salesmen should not be nervous, nor jealous of their associates in the same line of business, and should be able to make up their minds instantly; in fact, to have made up their minds before the opening of the market. They should not offer goods that will not be ready to move within the expected time, and rules governing the same. They should not offer goods that they do not mean to sell, and once offered, all goods should be sold to the highest bidder, showing no partiality to buyers. Salesmen have no right to be speculators with other people's property. If they get the best price that the market will afford, they have done their duty, and the experiences of the past three years ought to convince us all that it is better to sell often, get the money into the hands of the patrons, and send the cheese forward, or at least get the cheese out of the curing rooms, and the money into circulation. More patrons have become discouraged by waiting long, long periods for their cheques, than by the fact that a neighboring factory has got a sixteenth or an eighth higher price. All cheese markets should dispose of the offerings at each meeting by the call system, and all buyers and salesmen should do their best to clear the board at each meeting, and I firmly believe that when it is well understood that buyers and salesmen have met for the purpose of doing business in a fair and above board manner, confidence will be restored and trade in this great staple will improve."

I want here to call your attention to the method which has been adopted in the Province of Quebec with the very best results. In that Province there was an Act passed by the Quebec Legislature, under which these syndicates are operated. This Act was passed in 1891. Each of these syndicates has an inspector, and this inspector is

required by this Act to hold a certificate of competency from the Board of Examiners. This Board is appointed by the Quebec Dairymen's Association. Over all these inspectors is the inspector general. There are now some thirty of these syndicates in successful operation in Quebec. Each syndicate has from fifteen to twenty-three factories working under it, and these thirty syndicates have some 540 factories under their control.

The duties and regulations of the Dairymen's Association with regard to syndicates are laid down as follows in the Quebec Act :

1. Establishing regulations for the formation and working of the said syndicates.

2. Of directing and superintending the syndicates.

3. Of establishing rules to define the duties of the inspector-general and of the inspectors who are to superintend the production of milk and the manufacture of butter and cheese in the establishments so organized into syndicates.

4. Of appointing a Board of Examiners for the examination of candidates for the office of inspectors, and of laying down regulations for the working of the said Board.

And whereas, there is granted to each syndicate a sum equal to half the outlay incurred for the service of inspection and instruction organized in the syndicate, including the salary of the inspector, his travelling expenses, and other expenses relating directly to the said service, but which sum granted must not in any case exceed $250 (two hundred and fifty dollars) for each syndicate.

Whereas there has been granted to the said Association, besides its subsidy and other ordinary concessions, an additional sum of $1,000 (one thousand dollars), for the expenses necessary for the direction and superintendence of the syndicates, as well as for the maintenance and due working of the Board of Examiners above mentioned.

The said Association constitutes, as follows, the programme of the formation and working of the syndicates, of their direction and superintendence, of the manner of conducting the proceedings of the Board of Examiners, and of the duties of the inspectors.

The PRESIDENT : I am glad that this admirable paper has been brought before you. I think we should not only deal with the practical and theoretical questions relating to the cheese industry, but also with the markets and what may be called the business side of the trade. There can be no doubt whatever as to the truth of the assertions which Mr. Pearce has made to us. The real question is, how shall we get rid of the condition of affairs into which we are drifting ? The necessity for the discussion of this question at these large conventions is this : The salesmen will never reform the markets until they are backed up by public opinion. It is you and the patrons behind you who have got to bring public opinion to bear upon this and every other question before we can get reform. I would like to get the views of some here, and if you will permit me, I will call upon several salesmen I see around.

Mr. STEWART : I have had quite a lengthy experience in the cheese business as a salesman, and I must say that the past season has been one of the worst that I have experienced in that capacity. I would fifty times sooner take the old hole and corner system than the one that has been in operation at Woodstock market during the past season. I believe Woodstock is in line with the doings of all the other markets of the Province. I have heard buyers say that perhaps Brantford is the best, but even it has not been without its shortcomings in that respect either. It seems to me that Mr. Pearce touched rather too lightly on the shortcomings or wrong doings of the buyers. I feel that there are just as many sinners amongst the buyers as amongst the salesmen. I think myself that there should be a great improvement in the manner of doing business. I have said that if I have anything to do in the sale of cheese on the Woodstock market another year, and no better system has appeared, I will never board the cheese. When Mr. Pearce calls the present system a farce, he does not use an exaggerated word. It has been a perfect farce. With regard to the buyers, I think the system degenerated

in Woodstock this way. Listowel market was held next day, and if a bid was made on Woodstock market that would be carried of course to Listowel. I put the question strongly to one of the buyers, and he admitted such to be the case. Woodstock market was used only as a "feeler" for other markets. It has been an idea of mine for some years that grouping factories together for the purpose of manufacturing and selling would tend to a more uniform article There is no doubt in my mind that an improvement would be made in this way, and I think there are other matters in which improvements might be made. At the present time every man that is buying wants to personally inspect the make at the factories. That costs a good deal of money and takes up a lot of time. I think there ought to be some individual in whom full confidence could be placed by the buyers, and that buyers should buy from the standpoint of that man's inspection. There is an enormous amount of unnecessary expenses as it is now. Forming groups of factories would, to my mind, overcome these expenses, and the quality of the cheese would be certainly more uniform. I would like also to see the home consumption of cheese encouraged by putting the best instead of the poorest into the market. We could not at the present time, I think, go into any grocery store and get a piece of cheese that would be at all equal in quality to the general run of cheese exported. Mr. Stewart concluded by admitting that over-production had much to do with the low prices last year, but pointed out that they had also been caused by the very cold winter experienced in England, the working men purchasing cheap mutton and eating soup instead of cheese as formerly.

Mr. White: How would you deal with the question of buyers who purchase cheese say three weeks before they are ready to ship?

Mr. Pearce: Simply not sell them. Adhere to that rule.

Mr. White: But suppose the market went back?

The President: Let it go.

Mr. White: Where would your patrons be?

The President: Educate them. It is not in the interest of cheese-makers to sell cheese until they are ready to ship. It is no advantage to anyone to ship them green. Mr. Stewart seems to agree with Mr. Pearce in everything, only he is not quite satisfied that he hit the buyers hard enough. That is the way with us all. When we listen to a good sermon we are all revolving in our mind how well it fits, especially in its application, the other fellow I think if all the salesmen would agree to sell their cheese when boarded the evil would be abolished. Buyers as a class would be fools to bid on cheese which they know in their hearts the salesmen have no idea of selling, and which have been boarded merely as feelers to obtain pointers as to what the salesmen may afterwards expect to get. There is competition among the buyers, and if they know that cheese when boarded is for sale they will bid fast enough.

Mr. Eagle: I have been very much interested in the discussion so far. I thank Mr. Pearce for his complimentary reference to the Brantford market. I think it is interesting to note that in proportion to the amount of cheese boarded, Brantford sells more than any other market in Western Ontario. The reason the Brantford market was established was because the men of our district could not get to Woodstock and back home in the same day. When we first established the market in Brantford most of the salesmen made up their minds that they would board and sell their cheese every market day. I believe the majority of the salesmen on the Brantford Board have adhered to that rule, and I think they have profited in consequence. Five years ago I made up my mind that I would take market prices every market day. For four consecutive years I have done that at Brantford, and I believe I averaged one-quarter to one-half cent a pound more than I did before I started selling every two weeks. Referring to Mr. White's point, I hold that if a man sells his stuff before it is made he is a speculator; if he holds it after, he is a speculator. If he takes market prices—and I believe the principle holds good in every kind of farm produce—I know by my own experience he comes out ahead. With regard to the article written by our secretary and read by Mr. Pearce, I may say

that Mr Campbell carries out the principles enunciated by him every market day, and as a result he got nine and five-sixteenth cents for his October cheese. The buyers knew Mr. Campbell was going to sell; they were anxious to get his cheese, and they paid him nine and five-sixteenth cents. I think that if one or two salesmen at each of the markets in Western Ontario would make up their minds that commencing next spring, they would always take market prices, such an object lesson would be provided that all the salesmen would soon fall into line.

Mr. RINCH: I have always made it a practice to sell on the board. This last year I only sold three times off the board. As regards the salesmen being the greatest sinners, I beg to differ. I have had buyers come to me two minutes after the market had closed and offer me one-sixteenth of a cent more than the price bid on the market that day.

Mr. PEARCE: When I made the remark that the salesmen were the greatest sinners, I meant by that, that salesmen have it in their own hands more than the buyers. The buyers we know do some very indiscreet things, but the matter all lies in the hands of the salesmen. If the salesmen will make up their minds only to sell on the board the whole question is settled at once.

Mr. CHALMERS: I am one of the salesmen at Listowel market referred to by Mr. Pearce. I have sold all my cheese over the wire, but, at the same time I advocate selling on the board. I for one would be satisfied to go in and join with the other salesmen and pledge ourselves that we would sell on the board. Still I don't think we should be bound to sell after we boarded them. Although we may offer on the board at a certain market I don't think that we should be bound to sell on that market. Mr. Pearce would go so far as to say that it is speculation for us to hold our cheese from one market to another. I don't think it would be wrong.

Mr. PEARCE: I didn't say it was wrong; I said it was speculation.

Mr. CHALMERS: As far as I am concerned I made a very good speculation this fall. In a week's time I got the advantage of a rise of one and three-eighths cents.

The PRESIDENT: What factory is that?

Mr. CHALMERS: Honey Grove cheese factory. I happened to see that there was a move amongst the buyers the day that they were paying eight cents for cheese. I held my goods and in a week's time I sold them for one and three-eighth cents more. But, I for one, would be satisfied to join with my fellow salesmen to pledge myself to sell on the board. Mr. Chalmers concluded by saying that it was his opinion that the buyers did not bid so high as they would do if hey knew that the salesmen intended to sell.

The PRESIDENT: We are getting along very well. I think we should hear from the buyers. They ought to have the privilege of defending themselves. The remark made by Mr. Rinch is very true. There is not the slightest doubt that the buyers are willing to pay more off the market than they offer on the board. But that does not solve the question; in fact it is rather aside from the real question. The point is this: if these buyers knew that they could not buy the cheese off the board they would not make any offers off the board, and there is where the salesmen have the thing in their own hands. The buyers are competing against each other. They must have the cheese and if they can't buy them off the board they will pay all they are worth on the board. The question is, how to bring about that condition.

Mr. MCLAREN: I agree with you Mr. President, the matter is all in the hands of the salesmen. If the salesmen bind themselves to sell only on the market they will get the biggest prices possible. If the buyers once knew that they could not buy the cheese off the market, they would buy the cheese on the market. If the salesmen will adopt that system, and the buyers know that no sale will be made in the country or off the market, I think there will be no difficulty in regulating this matter. I think we should hear from some of the salesmen of the big factories. If they will adopt the principle there will be no difficulty in the world of making it a success.

Mr. PRAIN: I worked hard to get the call board, and I have sold on the call board. I would not agree to go back to the old way.

R. M. BALLANTYNE: I quite agree with those gentlemen who have said that the call board as carried on now is a farce. I have been around the markets for pretty nearly the whole season, and at every place they were a farce. At the Woodstock market there was at the commencement of the season some slight attempt at sticking to the rule, but it degenerated. During the latter part of the season it was as bad as any of them. At Listowel at the end of the year no attempt was made to follow out the rule—there was no bidding at all. Some business was done at London, and some business is still being done there; but even there the men felt that if they sold on the board they would be taking less money than they might get off the board. That feeling has crept in at all boards. It is almost impossible to get salesmen to sell—to get them to feel that they can make just as much on the board as they can afterwards. The buyers have arrived at the conclusion that it is not wise to make their best bid on the board. I do not think the question will be as easily solved as a good many men seem to think. You have first to get it into the heads of the salesmen that they will receive as much money by selling on the board as they will by holding their cheese until afterwards. I do not think they will bind themselves. If that could be accomplished, you would get over the difficulty at once; but I don't believe any salesman will bind himself to sell on the board, and unless that can be done, I don't see how the call board can be made a success either here or anywhere else.

Mr. WHITE alluded to the manner in which the buyers forced the half pound system on the salesmen by agreeing that they would buy in no other way, and suggested that the salesmen should adopt a similar method in regard to selling on the market.

Mr. GOODHAND: With regard to the half pound system, the buyers passed a resolution that it should live, and live it did. As to the sinners under the present system, if the buyers and salesmen were put in a box and shaken up together, I don't know which would come out first. The only way that I can see out of this trouble is for the buyers to pass another resolution that they will buy nowhere except on the board, and then I will guarantee that the salesmen will only sell on the board. The buyers will then get the cheese and we shall get better prices.

The remarks of the last speaker were greeted with applause, whereupon the PRESIDENT said: I notice that some of you seem to approve very much of that suggestion. I do not desire to criticise, but it does seem to me that perhaps you are getting the cart before the horse. A number of the buyers here may be willing to do that, but they have not the matter entirely in their own hands. Supposing buyers here did agree not to buy outside the market, and other buyers came in from Toronto, and going around to the different factories purchased everything they could lay their hands on? On the other hand, the salesmen are completely their own masters. Mr. Chalmers made a pertinent observation when he said that you could scarcely expect salesmen always to be willing to sell their cheese; it might be in their judgment better to hold it. That can easily be obviated in this way: whenever the salesmen find the market in such a condition that they do not think it wise to sell their cheese, let them not board it. But I believe the only solution of this problem is that when the cheese are boarded they shall be sold. I have watched the market as a reporter and one interested in the trade. I do not know whether my opinion is of any value, but I give it to you for what it is worth. All my sympathies—I say it unreservedly—are with the salesmen. I want to see them get as much for the cheese as possible. The sympathies of everybody interested in the trade, outside of the buyers, whose business it is to pay as little for cheese as possible, must be with the salesmen. As the result of the observation of years, I am perfectly satisfied that there are two things that the salesmen should never do. In the early part of the season up to the summer, salesmen should never hold their cheese when they are ready to ship under any circumstances. With reference to the last part of the season, the conditions are rather changed. There is a little chance for speculation on the exercise of judgment. If a man comes in here, say on the 15th October, and he finds that the market is such that he is not going to sell his cheese, do not let him board them; but if he does board them, let him stand by the cheese as they are boarded. The real trouble is this: the salesmen have got the

patrons of the factory behind them. It is very easy for the patrons to find fault with the salesmen, and I know the salesmen are liable to be kicked out by people who do not know a tithe of the condition of the market that the salesmen do. There is the trouble, and one reason why I urge an agreement between the salesmen to sell only on the market, is that it would relieve them of a great deal of responsibility. If the salesmen can go back and say to the patrons, "We put up our cheese; this was all that it would bring," it would be a great relief to them. It would, I think, be much better for the producers of cheese if there were no salesmen at all on the market, although we would be sorry not to have them.

If the secretaries of the factories would send in a postal card saying "We have so many cheese for sale," I honestly believe (I am not advocating the system, mind you) that there would be better prices got for cheese than have been offered on the boards during the present and past seasons. Let me make one personal reference. I have reported the markets here for some years. I have watched them very closely. I have never been foolish enough to personally give salesmen advice as to whether to sell or not; but I have very often offered advice through the papers, and I feel a great deal of satisfaction in knowing that I have never made a mistake yet in reference to the markets whenever I ventured the opinion as to how they were going. I do not take any credit at all. Sometimes by not watching these things salesmen have got badly left. I remember on one occasion a very intelligent salesman who got left by holding on speculation. He actually thought that the papers had had something to do with the depression of the markets simply because they threw out a few hints for his benefit, and which would have been of material advantage to him had he taken them. I need scarcely refer to the influence which a local paper has for depressing or raising the markets which are entirely dependent upon Great Britain! I strongly urge that the salesmen are the people to act in this matter of selling on the market. They should enter into an agreement that, whenever they board cheese, that they shall sell, and that they shall not sell except on the board. If they do that, I believe the whole question will be settled.

Mr. Blayney: If both the buyers and sellers have been sinners, as appears to be proven here, why not cease to sin? Let us come together honestly and squarely. We are all on the same boat. We all have a certain amount of competition to meet. If we join a board let us live strictly up to its rules, and let us not be shuffling any more. Perhaps the decreased value of cheese will do us good. When a good business man gets into a corner he will force his way out of it. That is what we have got to do in the future, and lay aside this accusing each other of committing sin. Let us in the future try and commit as little sin as possible.

Mr. Williams: I am neither a salesman nor a buyer, but I think if all the cheese were sold on the market on the call system it would have a tendency to raise the quality. Buyers do not like to pay the same price for all cheese that are offered, because they are not all of the finest quality. I do not think they are to blame. Parties who have not got a real fine quality of cheese do not care to put them on the board and take a less price than their neighbors. Consequently I think if it were made imperative that all cheese should be boarded, it would have a tendency to improve the quality. Those now turning out poor cheese would be compelled to improve the make.

The President: The point made by Mr. Williams is one of the best that has been brought out yet. It must have been the observation of everyone who has attended the cheese markets that the buyers scarcely deal fairly with the cheese trade or with themselves. Under the present system the poorer factories get about the same price as the best factories. If the cheese were put up for this competition which we aim at, I believe the results would be better. There would be an assorting of the cheese, and if it were known that gilt-edge cheese would get gilt-edge prices, and that poor cheese would not, then you would see an improvement in the quality.

Mr. Leitch liked the proposal. He believed the buyers had had a good deal to do with the present state of affairs through purchasing cheese off the market at a higher

figure than that quoted on the board, the buyer and the seller promising to say nothing about it. He thought both parties had been guilty of such work, and that it had deteriorated the usefulness of the call board system.

Mr. DOWNHAM: I think Mr. Williams touched the key-note of the whole situation. As long as there are good cheese and poor cheese you will never get the buyers to buy or the sellers to sell them on the market. Every salesman who comes to the market thinks he has good cheese, but buyers know they are not all good. The buyers will never pay the same prices all round unless you can get the factories to make cheese all of one quality.

Mr. PAGET: After all this discussion, I do not know that we are very much further ahead than we were at the beginning, as far as being able to solve the mystery is concerned. I am of opinion that, in addition to having the salesmen of the factories unite, it will be necessary to have the buyers unite. I think if the buyers and sellers on the different markets were to bind themselves not to buy or not to sell off the market that this difficulty could be got over very much easier than in any other way. The President, in speaking about the buyers binding themselves not to buy off the market, referred to outsiders who might come in and buy. That could be obviated in this way. The Secretary of the Brantford market has a book, and upon that book are written certain rules, and each buyer and each seller is supposed to subscribe his name to these rules. If every cheese market had a set of rules, one of which was that no cheese should be sold off the board, then the outside men before they could buy cheese would have to subscribe their names to those rules. I am heartily in favor of selling cheese upon the market, and upon the market only. I have endeavored to carry out that idea in my own experience to a very great extent, although sometimes I have sold off the market, but I have found that when I have done so I have been the loser. When I have sold right along on the market I have been invariably the gainer. If all the buyers and sellers were to unite and bind themselves, then we would overcome the difficulty. I think that buyers ought to be willing to bind themselves just as well as salesmen. If the buyers could force the salesmen to comply with their requests regarding the half-pound weight, why not in this? I think if the buyers will take a firm stand with the salesmen this difficulty can be got over, and unless they do I do not think it can.

Mr. R. M. BALLANTYNE: One of the main difficulties is in case all the salesmen of cheese factories are not members of the boards. It is not an easy matter for some of them to belong to any board. There are factories in some places, for instance at Windsor and Wallaceburg, that are so far from the markets that it would be an injustice to insist upon these men selling their cheese on the markets. For that reason the buyers could not bind themselves to buy only on the board. There is another reason. A buyer gets a large order for cheese, and he wants to fill it as rapidly as possible. If he is attending Woodstock market to-day he can perhaps only get 800 or 1,000. Under the rule you propose he would have to wait until the next market before obtaining the balance, whereas under the present system he can go around to the factories and fill his order in a short time.

Mr. PAGET: Where there are no markets available I don't see any objection to letting factories sell off the board; but take the neighborhood of Brantford, London, Woodstock, Listowel, there are none of the factories but can reach the markets. I know in our neighborhood there are a number of factories that do not belong to any board because they think they can do better outside the market. The buyers after attending the market slip around to these factories. They have no extra travelling expenses to meet, and they feel that they can give a little better figure than that quoted on the board. Every factory that is within a reasonable distance from a market should be compelled to sell its cheese on that market, and every buyer to buy there.

The PRESIDENT: The difficulty that I foresee of getting the buyers to make any agreement is simply this: it is opposed to their interests to make such an agreement, and it is asking a good deal of these men to come to an agreement that is against their interests. But what is asked of salesmen is to come to an agreement that will improve their condition. If we had markets such as this discussion aims at the buyers would have to pay

more for cheese than they do now by the hole-and-corner methods into which the markets are drifting. The reason the buyers came to an agreement over the half pound matter was because it was in their interests to do so. Now you ask them to come to an agreement which is against their interests, because if it were not why discuss the question? The reason that you salesmen are discussing this question is that by discussing it you will put money into your own pockets. The matter is entirely in the hands of the salesmen and those whom they represent. Just allow me to make a suggestion. I was collecting a good deal of information upon this and other matters connected with the dairy recently, and I got a paper from Mr. George Hately, a well known buyer in Brantford. It was too late for publication, but I believe there are some points in that paper that are worthy of your consideration. As there is some time left us this afternoon, I would suggest that the Secretary read that paper to you. I may say that when Mr. Hately wrote this paper we never had any idea that this discussion would take place.

HOW TO IMPROVE THE CHEESE MARKETS OF WESTERN ONTARIO.

The following paper, by Mr. George Hately, of Brantford, was then read:

The request for ideas on this subject, affecting as it does the interests of some four hundred cheese factories, having an annual output in the neighborhood of forty-five million pounds, valued at about four million dollars, immense and constantly growing, shows the necessity for such a medium as the *Sentinel-Review*, that is in touch with and knows the needs of the trade, through which questions affecting these interests can be discussed. It is to be hoped that others, better qualified and more able to clearly express their ideas, have contributed, in this special issue, towards the solution of the problem. These markets can be improved either by abolishing the present system and substituting some other, or by taking the markets as they are and perfecting them. As they now exist, the markets are, like the British constitution, a growth. The foundation principle of the markets is good, but the structure is weak and imperfect.

The object that has been kept in view, in considering this question and in making recommendations, is: "To provide a mode for disposing of the product of the cheese factories of Western Ontario to the greatest advantage, at the smallest expense and with the least loss of time."

It has also been borne in mind: "That no system, constitution or code of laws, however perfect in theory, can be imposed on the members unless they themselves are ready for it and desire it." And after they are desired by, and have been accepted by the members, it should be borne in mind that "they cannot be made effective unless (1) Able executive officers are appointed, and this depends on the members themselves; (2) Power be provided for the executive, to enable them to enforce the rules and discipline the members."

In order to know how to improve and perfect the markets, as they are now constituted and practised, it is necessary to know in what points they are weak and faulty. Being voluntary associations, they have no legal standing and no legal power to enable their officers to enforce their rules. Consequently demoralization inevitably ensues through the continual and persistent breaking of the rules by individuals. Owing to the continual changing of the *personnel* of the market, there is no chance for the formation of a feeling of pride in our market to become permanent.

Another weakness is the failure hitherto to grasp the full idea of "the call board system," which has from time to time been in operation on all the markets. A third weakness is the facility with which the discovery of breach of rules can be evaded. This arises chiefly from the fact that members are not bound to buy and sell on the market only. With the markets at intervals of a week, or at intervals of two weeks, no rule compelling factorymen to sell on the market only could be enforced without loss and injustice to them.

The following recommendations are made :

1. To provide legal power to enforce the rules of the market.

2. To facilitate and expedite trading through the " call board system."

3. To provide for the adoption of rules to buy and sell only on the market, without increasing the risk of loss.

4. To assist the member who wants to buy to find one who wants to sell ; and to assist the member who wants to sell to find one who wants to buy.

With these ends in view the following recommendations are made :

That an Act of Parliament (or of the Legislature) be obtained to authorize the incorporation of the cheese markets at Ingersoll, Woodstock, London, Listowel, and Brantford, on the persons who may be authorized to become members thereof signing a certificate and depositing the same in the registry office of the county in which the market is located.

The Act to empower the members of each market to enact by-laws, or rules, for the government of their market.

The Act to provide that a member of each market shall be entitled in each of the other markets to all the rights and privileges which the members of those other markets possess, except the rights of discussion and voting at the meetings.

The Act to provide that the persons who are eligible for membership of the markets shall be cheese merchants, their agents and representatives, dealers in dairymen's supplies, proprietors of cheese factories, agents or salesmen, duly appointed, of cheese factories, dairymen's brokers or agents.

The Act to contain the usual clauses for the settlement of disputes between members by arbitration.

The Act to provide that the title of these markets shall be "—— Dairy Exchange" for instance, "Ingersoll Cheese Market" to be called "Ingersoll Dairy Exchange." This is comprehensive, and is intended to prevent confusion arising between the provisions of this Act and the idea conveyed by the Board of Trade Act. The Act to provide for the affiliation of the cheese markets into a general board, to be known as the Western Ontario Dairy Board ; such general board to be composed of all the members of the cheese markets ; to be managed by a council composed of representatives from each market ; such council to have power to frame general rules for the government of the cheese markets ; such general rules, when framed, to be submitted to special general meetings of the members of each of the cheese markets for their approval, which approval may be given by resolution in the usual manner ; and such general rules to become effective only after receiving the approval of *all* the cheese markets ; and such general rules to supersede any rule of the cheese markets which may be contrary thereto.

The Act to empower the general board to grant charters for the establishment of markets at places in Western Ontario, on application being made to them ; and to prevent the establishment of such markets at places in Western Ontario, where, in their opinion, it would militate against the best interests of the industry.

It is recommended that the by-laws provide for limiting the hours during which trading may be done.

The by-laws provide that trading be done publicy under the rules known as the "call board system."

The official appointed to act as "caller" should understand that the idea of the "call" is "an equal right to the sellers to offer their goods through the 'caller,' to name their price, and if not accepted, to offer a lower price ;" as "to the buyers, to offer to purchase at a price, and if not accepted, to offer a higher price." Hitherto the practice has been based on the idea of the "auction" rather than on the idea of the "call." Should the present practice be allowed to prevail, it is recommended that when any

cheese remains unsold there be an additional "call," when the "caller" shall ask if any salesman desires to offer his cheese at a stated price. If so, the "caller" shall "call" the same. If offer is not accepted, the salesman may repeat his offer at a lower price, and so on, till a sale is made.

The by-laws shall provide that all cheese shall be sold publicly on the market under the "call board" rules, except when such cheese, having been so sold, has been rejected on account of quality. Almost the sole objection to such a rule being enacted has been the fear of loss arising by losing favorable opportunities for selling and depreciation in quality from heat during the interval between markets. This objection is removed by the privilege factorymen will have of selling at all the markets, thus giving them the benefit of a market nearly every day in the week, instead of weekly or fortnightly. And combined with this privilege is the introduction of cheese factory agents, or brokers, who would attend all the markets. The employment of brokers is recognized in the leading markets of the world as the most convenient and most economical mode of buying and selling. The method would be much the cheapest for most factories. The commission would be a very trifling charge per box, and, doubtless, capable men would engage as brokers, in whom the factorymen would have confidence. The factoryman would communicate, by letter or telegram, the particulars of his offering, with instructions as to lowest price and terms, if necessary. At the close of the market he would receive telegram giving, if sold, buyer's name, with price and terms. Brokers would sell as agents of, and in the name of, cheese factories, who must be members of the market, or of one of the affiliated markets. The broker must, therefore, for his own protection, be able, in case of dispute, to prove his right to sell for a factory. These ideas are somewhat crude, and are not very clearly set forth. Such as they are, they are given for what they are worth. It was intended to draft and submit a complete Act, constitution and by-laws, but want of time and opportunity for consulting with those accustomed to such work, and with those familiar with the requirements of the trade prevented this. If these recommendations meet with general favor, it is further recommended that an endeavor be made to have an Act passed at the next session, and that a constitution and by-laws be drafted, printed and circulated among the members of the various markets, ventilated through the medium of the press, and submitted to special meetings of the members of the various cheese markets next May or June for discussion, amendment and adoption.

REPORT OF DAIRY EXHIBITS AT THE INDUSTRIAL AND WESTERN FAIRS AND DAIRY TEST AT GUELPH.

GENTLEMEN,—As your representative to the Industrial Fair I take this opportunity of presenting my report. I attended the annual meeting of the Fair Association on February 12th and a meeting of the Dairy Committee on April 19th. There was not much change made in the arrangement of the prize list last year, with the exception that the prizes for white cheese were made equal in value to those for colored cheese. This was a wise move, as white cheese require as much if not more skill to make than colored. A change was made in the personel of the judge last year. For two or three years previous a judge had been selected from the United States. It was felt by some members of the committee that this was unnecessary, as by removing all marks of distinction from the cheese a thoroughly impartial judgment could be given by a Canadian judge. Besides, it was felt that a person thoroughly familiar with Canadian methods of manufacturing, and having an accurate knowledge of the excellence required in our Canadian cheese, especially as to its suitability for the British market, would be in a better position to judge the product of our makers, than one familiar with American methods only. I had the pleasure of submitting several names to the Industrial Executive, of persons whom I considered competent to undertake this work, and I am pleased to state that one of these was selected in the person of Mr. A. F. MacLaren, whose ability te act in the capacity of judge on cheese is recognized by everyone.

At the request of the manager of the Industrial Fair I assisted in judging by way of keeping a record of the score made by each exhibit. There were over 500 cheese on exhibition from Ontario, Quebec and Manitoba. All marks of distinction were removed,

and each lot of cheese scored according to the following standard for points of quality: Flavour, thirty-five; quality, twenty-five; texture, fifteen; color, fifteen; finish, ten; total, 100. Those obtaining the highest scores in each class were again thoroughly examined and compared and the awards made accordingly, so that a fair, accurate and definite plan was carried out all the way through and the awards are particularly valuable on that account.

There were twenty-eight prizes in all for Cheddar cheese. All these prizes were taken by Ontario makers, and twenty-two of them came to Western Ontario. After the awards had been made the cheese from the various provinces were compared. The cheese from Quebec, though scoring well in texture and finish, were lacking in flavour, having an objectionable flavour that left a bitter taste in the mouth. The cheese from Manitob awere smaller in size than the others and lacked chiefly in body and showed too much moisture for good shipping cheese. The Ontario cheese showed a wide range between the quality of the poorest and the best; this would apply to the cheese from Western Ontario, and is a striking proof of the need of more uniform methods of making. Their chief fault was also in point of flavour; but the objectionable flavours in them were of a varied character, and not a single marked flavour peculiar to themselves as in the Quebec cheese. There was an improvement in all the cheese in point of finish and general appearance over exhibits of other years, though a great many of our makers who exhibit cheese could improve considerably in these particulars.

The accommodation provided for dairy products by the Industrial is very good, and with the exception of a few minor points in regard to the location of the cheese in the dairy building, is as good as dairymen should look for. The exhibition draws exhibits from all parts of the Dominion, and supplies a means for bringing all Canadian cheese together and of producing a friendly rivalry between the various cheese centres that should be productive of much good to the trade. The display of butter was large and well presented, but as I had nothing to do with its arrangement I am not in a position to give any particulars regarding it.

The Western Fair.

Though not one of your representatives to the Western Fair, I have assisted the judges during the past three years by recording the score made by each exhibit of cheese and butter, and have on file in the Association's office a complete record of the points made by each exhibit of cheese and butter for 1894 and 1895, and have also the score made by each point of quality. I have also taken the trouble after each fair to fill in the score cards and mail them to each exhibitor. Had I the time I would like to give you in detail some of these records, as the lessons to be learned from them would be valuable.

There were on exhibition last year at the Western Fair 270 cheese. There was considerable improvement over the previous year's exhibit in finish and neatness. The quality of the cheese on the whole was not so good. Both cheese and butter were lacking in one essential quality—a perfect flavor. There appeared to be a wider variation in this particular between the butter exhibits of 1894 and 1895 than between the cheese exhibits of the same periods. Last year very much of the creamery butter, which is usually of good quality, was weak in texture and grain, and very much lacking in flavor. The highest score made by any exhibit of cheese in 1895 was ninety-six, and the lowest seventy, the average being about ninety. The highest for 1894 was ninety-six and a half and the lowest seventy-five and a half, the average being ninety and three-quarters. The highest score made by any exhibit of creamery butter for 1895 was ninety-seven and a half, and the lowest eighty-four and a half, the average being 92.36; and the highest score made by any exhibit of dairy butter was ninety-six, and the lowest eighty-eight, the average being 92.38.

The amount of prize money awarded in sections 1 and 2, in cheese and butter classes, was divided as follows: The number of points scored by each exhibitor of cheese over ninety-four points and of butter over ninety-six points were added together and divided into the amount offered for prizes, and this product multiplied by the excess number of points in each case gave the amount of each prize.

This *pro rata* plan seemed to give satisfaction, and in some ways is preferable to the ordinary method, as each exhibitor shares in the prize money if his cheese or butter scores up to the standard.

The judges last year were A. F. MacLaren in cheese and W. P. Hibbard in butter. The Dairy Department of the Western Fair was in charge of Mr. John S. Pearce, one of the representatives from this Association last year, and if he will permit me I would like to state that Mr. Pearce is sparing neither of his time nor energy in making the dairy display one of the most important on the grounds. The accommodation provided for cheese is ample, though that for butter might be improved. We learn that there is a movement in this direction, and that some change will be made in the dairy building before the next fair.

Dairy Test at Guelph.

A dairy department was inaugurated last year in connection with the Provincial Fat Stock Show, held at Guelph on December 10th, 11th and 12th. The total prize money was $135, made up of a grant of $50 from this Association, and a like amount from the Agriculture and Arts Association, and donations of $25 and $10 respectively from your President and Secretary. The regular prizes were supplemented by a number of valuable special prizes given by the *Farmer's Advocate*, London; John S. Pearce & Co., London; F. W. Hodson, Superintendent of Institutes; The *Sun* Publishing Co., Toronto; and the Bryant Press, Toronto.

The prizes were given for dairy cattle only, and a milking trial of dairy cows carried on which proved to be one of the interesting features of the show. A twenty-four hours test was conducted according to the standard rules for the British dairy shows, with the exception that constitution and conformation were taken into account. The following was the scale of points used: Twenty points for constitution and conformation; one point for each pound of milk; twenty points for each pound of fat; four points for each pound of solids (not fat); one point for each ten days in milk, after the first twenty days (limit, 200 days); ten points shall be deducted from the total score for each per cent. of fat below three per cent. of fat in the milk."

There were classes open for Shorthorns, Ayrshires, Holsteins, Jerseys or Guernseys, and grades. All these breeds were represented excepting Jerseys and Guernseys. There were eleven cows competed in all. This is not as large a number as some of the more enthusiastic promoters of the show would like to have seen, but considering the time of the year, and the fact that it was the beginning of the Dairy Department, there were as many as could reasonably be expected, and I have no doubt that if the Dairy Department is continued another year there will be a much larger display.

The results of the test are tabulated as follows:

Name of cow.	Breed.	Owner.	Points of constitution.	Pounds of milk.	Average per cent. of fat.	Pounds of fat.	Pounds of solids (not fat).	Total points scored.	Awards.
Lady Bright	Shorthorn	H. Wright, Guelph	15.4	45.31	2.55	1.16	4.14	102.07	1st
Calamity Jane	Holstein	A. & G. Rice, Currie's	18.1	69.18	3.16	2.09	6.4	153.06	1st
Eunice Clay	"	" "	17.2	40.68	3.2	1.30	3.22	108.26	
Aaggie Ida 5th	"	Wm. McClure, Norval	16.2	35.53	3.5	1.24	3.11	99.97	
Aaggie Lady of Loraine.	"	" "	15.1	47.19	3.45	1.65	4.33	116.11	2nd
Jean Armour	Ayrshire	W. M. Stewart (jr.) & Son, Menie	15.9	31.18	3.75	1.17	2.76	87.62	2nd
Ada	"	W. M. & J. C. Smith, Fairfield Plains	17.3	46.31	3.9	1.79	4.09	119.07	1st
Gusta	"	W. M. & J. C. Smith, Fairfield Plains	15.6	31.13	4.15	1.29	2.95	87.53	
Blue Bell	Grade	D. Keleher	14	21.07	4.8	1.01	1.96	68.61	3rd
Rose	Shorthorn grade	Jas. Bowman, Guelph	14	46.5	3.8	1.77	4.23	113.82	1st
Nancy	Grade	Hugh McDougal, Guelph	15	24	4.6	1.10	2.26	81.04	2nd

The first sweepstakes prize was awarded to Calamity Jane, a Holstein cow, which gave 69.18 pounds of milk in the twenty-four hours, and the second sweepstakes to Ada, an Ayrshire cow, which gave 46.31 pounds of milk. Those in charge of the test were G. E. Day, B.S.A., Lecturer in Agriculture at the Ontario Agricultural College, Guelph; T. B. Millar, your Inspector, and your Secretary.

In the prize list it is urged that the judges make some suggestions as to how a winter dairy show may be best conducted and made most instructive. I have neglected to consult the other judges in this matter, but will take it upon myself to make the following suggestions:

(1) Interest every dairy breeders' and dairy association in the show, and get them to contribute towards and take some part in arranging the prize list.

(2) Endeavor to have prizes as large as possible, as exhibitors of dairy cows are under considerable expense, and are loth to go to much trouble unless the prizes are worth trying for.

(3) Prizes should be given for male animals as well as for females.

(4) It would be more serviceable if the dairy test were conducted for a week or ten days, and the amount of feed consumed taken into account; but as this involves considerable time and expense it is not practicable at a three-day show.

(5) Have warm, comfortable buildings for all stock, and especially for milch cows. It would be better to have a separate room or building for dairy cows, so that they could be kept quiet during milking.

(6) If dairy products are to be shown, a well-ventilated and roomy building, in which the temperature can be controlled, should be provided; and it should be detached, if possible, from the building in which the stock are kept.

(7) Have some of the best and some of the poorest samples of cheese and butter cut up and their good and bad qualities pointed to exhibitors and others interested.

(8) It would be instructive to have one of the judges give an exhibition of milk testing and the judging of dairy cows by conformation during the show.

(9) Where practicable, it would add to the interest and value of the show to have an exhibition of butter-making, and if possible a competition between butter-makers as is practised by some of the great dairy shows in Britain.

All of which is respectfully submitted.

Your obedient servant,

J. W. Wheaton.

London, January 6th, 1896.

The meeting then adjourned until the evening.

FIRST DAY—EVENING SESSION.

The Opera House was well filled at the evening session. President Pattullo again occupied the chair. The first gentleman called on was the Mayor, who was present as the representative of the town. A number of songs were sung during the evening and were much appreciated.

ADDRESS OF WELCOME BY THE MAYOR.

Mayor Cole expressed the pleasure it gave him to be present at the nineteenth annual meeting of the Dairymen's Association and welcome the delegates to Woodstock. He referred to the rapid advance of the dairy industry in Canada, and especially in Ontario. This was owing to the interest taken in the industry by distinguished gentlemen, some of whom were on the platform this evening. The subject of good roads was one, he thought, which was intimately bound up with the prosperity of the dairying industry. With good roads the cost of the output of dairy products could be reduced by a considerable sum, and thus put money in the pockets of those who were engaged in the business. It was a matter of satisfaction to him and to all the people of Woodstock to know that the Association had received its beginning in the county of Oxford. The Mayor closed with extending a cordial welcome and the freedom of the town to the members of the Association.

President PATTULLO spoke for the Association in accepting the courtesy of Mayor Cole, and expressed the assurance that the present meeting would be the greatest and most influential in the history of the Association. Mr. Pattullo said that considering the magnitude of the industry, which was under the direct care of the Association, it was not surprising that the good people of Woodstock should extend to the members such a cordial greeting. I have now very great pleasure in introducing to you the first gentleman whose name is on the programme to-night, and I am quite sure that he will receive the same cordial welcome from you that he has had on every other occasion on which he has appeared before Canadian audiences. I refer to our old and beloved friend, Mr. John Gould, of Ohio.

A VOICE FROM OHIO.

Mr. GOULD, in beginning his address, said he was only too glad to come to Canada again, as he had a great many friends here. He elicited much laughter by saying that he had come as a messenger of peace, and he would not be greatly put out to find himself held as a hostage. He could imagine no more pleasant fate than to be seized by the cowboys of Canada and held captive till the war is over. Continuing, he said: "I believe I told you when I was here last year that the dairy business was going to be better in the year to come. I believed it. I am trying to believe it now, but unfortunately it has not proved as I had wished, and so to-night I am not going to set up as a prophet again. I am going to take what comes in the future and bless the Lord for it. We are to-day a sort of prisoners of hope. We are hoping that the dairy business is going to be better, but whether it is better or worse you will find out that the dairying country—the country that has once adopted dairying—will always stay by it. The dairy has always and ever will be a factor that brings up a one-sided agriculture and balances it and sets it into true motion again. At least it is the cow that comes in and brings up the agriculture and puts another money crop into the farmers' hands. It has been the history of the States from the Hudson River to the Pacific Ocean. When the land has been wheated out, then the cow has come in to bring the farmer back to prosperity again. When the land has been corned, then the cow has not been made into corned beef, but has been brought in as an agent to turn corn into money." Mr. Gould went on to say that more money was received for butter shipped out of the state of Iowa last year than all the ore the silver mines had produced; yet Congress never got excited once about the dairy interest of Iowa. The dairy industry was spreading all over the country. It had been introduced down in the cotton belt and they were going to make Georgia a prosperous State just as his friend, Hon. John Dryden, was going to start dairying in Algoma. (Laughter and applause). Sheep in his country had gone the way of all the earth, and horses selling for $6 a dozen had knocked the bottom out of the live stock trade. There was no money in beef, even raised on the plains at little cost. Yet, despite the low prices, they

found the dairymen to-day sticking just as tenaciously to the trade as they did, and a dairy cow sold for money. Why? Because that dairy cow, despite low profits, brought in money 365 days in every year to the farmer, and there was not another thing on the farm that did it. The farmer who was not in the dairy business in the United States would soon be in bankruptcy or going to live with his father-in-law. (Laughter). "What we dairymen have got to do," said Mr. Gould, "is to bring in new forces and new resources; and whilst we cannot get more than twenty cents a pound for butter, and eight and nine cents a pound for cheese, we can get down a little closer to the ground. I do not mean that we must use more economy We are economizing all that is necessary, but we must begin to utilize forces that we have never utilized before, and it is possible even with the lower prices that we shall get as much money out of the dairy as we got with the higher prices."

The PRESIDENT: Mr. Gould has just whetted our appetite for what is coming to-morrow. I feel sure that all of you who have heard him to-night will want to hear him make his real speech, or rather his series of speeches, to-morrow and the next day. I think that Mr. Gould was a little reckless when he got off his little shot at our Minister of Agriculture in reference to starting that dairy school up in Algoma. I would like to say, with reference to that school, that I am a little sensitive on that point. I claim to be a sort of half godfather to that school, because I have been advocating something of the sort for a good many years. I think one of the best things Mr. Dryden ever did was to start that dairy school up in Algoma, where there is a great deal of fertile land. There are very few people in this Province who realize the enormous resources of northern Ontario. We speak of the "wilds of Algoma," when as a matter of fact there are enormously rich valleys up there, and I am quite sure that that little model dairy farm of Mr. Dryden's will do a very large amount of good.

Hon. John Dryden, on coming forward, was greeted with much applause.

UNITY AND DETERMINATION OF PURPOSE.

Mr. DRYDEN said that he observed, on looking at the audience, that he would have to address some who could not be considered either dairymen or dairymaids, and he felt very much like one of the Governors of Texas, who was asked to speak to the inmates of the State prison, and who after trying several unsatisfactory modes of commencing his speech, recklessly launched out as follows: "I don't care what you are; I am glad to see so many of you here." He was on that principle, glad to see so many in the audience that night, and he was especially pleased to see his friends from the United States. When he first saw the programme of the convention and perceived that the names of Mr. Gould and Mr. Louis were on it he had said to himself, "These men will never be present. They will never come with the thick war clouds hanging over us." But when he arrived this evening at the station almost the first man whom he had met was Mr. Gould, and very glad he was to grasp his hand. The fact that Mr. Gould should be here would indicate to the speaker that he would not again vote for Mr. Cleveland.

Mr. GOULD: I never did.

Continuing, Mr. DRYDEN said: "I am reminded that both of these gentlemen are engaged with the dairymen of this country in a warfare after all. It is rather a pacific strife. They are stimulating strife for the purpose of building up each of our countries to make humanity better—not for the purpose of destroying, as the policy announced by President Cleveland would do. I am always glad to meet representative dairymen from the Republic, and while in this country we will try to get ahead of them in producing better products, still we always welcome any advance they may make just as they will welcome any advance that we may make in this respect. Something has been said about Algoma. I am quite willing to wait and bide my time. By and by you will see what

we have done up there. Some of you have no idea what Algoma is able to produce of those things which go to make dairying a success. I suppose you will scarcely believe that timothy sown on May 20 on this little farm in Algoma had reached about two and a half feet high in August, and that I cut some of it in August and it was exhibited at the Toronto Industrial Fair. Where we can produce grass, as we have already proved we can do, I am quite sure we can make dairying a success, because other things will grow where grass will grow. My friend the Chairman tries to take a little credit for the establishing of what he calls a dairy school in Algoma, and he says he is so glad that I established the institution. I do not like to disturb his sweet thoughts, or take anything away from him, but when I tell him that I have not the slightest idea of starting a dairy school there I do not know what he will say. We simply call it a pioneer farm. What is it for? For the purpose of showing the people of this country—showing the world—that we have good agricultural land in that district of Algoma, and that people have been riding over it and past it on the C P.R. to get into that wonderful province, Manitoba, and have not dreamed of the thousands of acres of fine land that exist and the wonderful resources of that part of Ontario. I am quite sure that in a few years we shall have a thriving settlement and town near Barclay Station, where the Government farm is. I am not here this evening to undertake to give instruction to men who I know are greatly my superiors in reference to dairy matters; I have rather to come to bring greetings and good wishes from the Ontario Government, which I have the honor to represent on this occasion. I would like to say that my honored and trusted Chieftain, Sir Oliver Mowat, will be with you himself on Thursday next. (Applause.) Our Government, Mr. President, are justly proud of the use this Association has made of the small sum of money which the Legislature has granted it for a number of years past. I believe that during all this time the money has been spent with due regard to wisdom and economy. I believe that I am right in saying that good value has been received for every item of expenditure which has been made in this way, and that the public generally have been able to reap abundant benefit from what you have been able to do through the work of this Association. No class of our agriculturists has been able to reach so high a position with their products as have the cheese makers of the Province of Ontario. Now this is due, I suppose, to a good many reasons; but as I look on the record that has been made I attribute it largely to three or four principles that have actuated their work from the beginning. I would like to suggest two or three of these. The first is unity. The cheese-makers have realized from the beginning the truthfulness of the adage that in unity is strength, while the contrary is just as certainly true. Separation always means weakness. They have had unity of purpose—unity of purpose in endeavoring to seek the very best methods that can be found for the manufacture of this product. Not the cheapest methods, for that has not been the idea; but unity of purpose in selecting the very best methods, having due regard to the quality of the manufactured article. I believe that in the early years of cheese-making in this country an attempt was made to adopt a method which would have produced a very inferior article—the attempt was made to take away from the milk certain of its properties, and substitute others that were cheaper, and put on the market a decidedly inferior article. It is easy for us now to see that that practice would have been disastrous—that it would have destroyed the market that we now hold; but the men of that time saw all this beforehand, and the result was that by unity of purpose and unity of effort the thing was stamped out, and it never obtained a foothold in this country. You and I are rejoicing to-day because it did not. I believe that in the United States—in some of them, at all events—that policy was adopted. Good men on the other side see the folly of it to-day, and would fain do away with it, and change it, and put a better state of things in vogue, but they are not able to do so, and the result is that they are suffering on account of it. Now, you have not only had unity of purpose, but you have had unity of methods as well. It is singular when we look to see how almost the entire Province has been united on the same method. Unity of purpose and unity of method have brought about practically a uniformity in product, so that when the goods are marked by the name of our country, the purchaser understands perfectly what particular quality he is likely to receive. The second principle that

has actuated all that has been done has been co-operation. It is manifest that if you are to have the best goods, the best products, it must be by the exercise of the best skill. Some good people who are listening to me now will no doubt think it is a very easy thing to manufacture cheese and butter—a simple process that anybody can learn. I remember my friend, Mr. Ballantyne, once saying that anybody could learn to make butter in half an hour. To day the authorities at the Agricultural College say they can find ten good cheese-makers where they can find one good butter-maker. It is not an easy thing to make fine quality cheese or gilt edge butter. It is manifest that you cannot exercise the proper skill unless you have proper buildings, proper machinery, and proper equipment all round. These cannot be furnished by a single individual, because it would not pay a single individual in the ordinary way to furnish such equipment as is an absolute necessity. The result is that the cheese-makers of this country have been willing to co-operate—to work together in this regard—and have united together to put up the buildings and get the machinery, and combine their raw material. And so in this way the very greatest skill can be used, leading to the highest quality which it is possible to produce. I know there have been difficulties in the way of carrying out this scheme, but the utmost unity and harmony have prevailed, and they have led to the very best possible results. Then you have had co-operation in another thing. You have, by co-operation, been enabled to give to your people the best instruction in reference to dairy matters. You have recognized just what I had the privilege of saying to the fruit growers in this city recently, that ignorance means failure in this industry just as certainly as it does in every other agricultural industry, and that knowledge means success. At all events knowledge is the first step towards success, and realizing that, you have joined together in order that you might send about the country instructors, for this reason, that you did not desire that any of your people should manufacture inferior goods, and so place them on the market in competition with that which was vastly superior. There always were and always will be men who are willing to take a little temporary gain, notwithstanding that they know it will mean future loss. A man, for instance, will undertake to deceive another; he will undertake to put false goods on the market; he gets temporary gain, but in a little while he destroys his market, and the result is failure. It is because you have by co-operation been able to prevent that altogether, and given such instruction and aroused such enthusiasm, that you have obtained the hold which you have upon the English market to-day. Another principle which has been in operation is one that is usually found among Scotchmen at any rate, and that is perseverance. The position which the dairymen of this country have attained has not been reached in a day nor a year. It has been done by patient plodding all these years, commencing at the very lowest round of the ladder at the very beginning, and going up, step by step, holding what we have gained and reaching forward constantly to that which is better and higher, so that we are able now to say that we have reached the topmost round of the ladder. That has been accomplished by constant and continual perseverance. We know that mistakes all along have been made, that failures have occurred, but these mistakes and these failures did not prevent the cheese-makers from going forward. These mistakes and failures were investigated, efforts were made to find out what caused them, and what ought to be done to remedy them, and the result is that by persevering effort and plodding industry, these very failures and mistakes have only led to something which has been still higher. Then the other principle which I want to mention is determination. I think as I read the history of this Association that it has been following this motto: "We *will* succeed; we are *determined* to succeed; we *can* place our goods on the best market in the front place; therefore we *will*," and so it commenced with the pluck which is—I don't want to frighten my American friends now—the true characteristic of the Briton, the determination to win. Failures have only led to a stronger determination to succeed. How is this to be done? Not, I submit, by a great deal of bluster and noise; not by creating a great sensation in the country and saying, "We have done this." That is not the way it will be done. I find some people inclined to take that method. That is not the way it has been done. It has been done by the patient investigation and study of the details of the business; hours, and weeks, and months of patient investigation

in order to find out what was needed to make a better product than before. By the exercise of good judgment and the acceptance of advice, because we have always been willing to receive sound advice—whether from Canadians, Englishmen or Americans—and using this advice to the very best advantage, we have been able to succeed. New discouragements have presented themselves. We are confronted now by a new kind of obstacle, and that is lower prices for those products which have been steady during all these years. We cannot say that in the past the prices for those products have been so very high. It has seemed to me that all the farmers got was merely good wages for the work in which they were engaged; but it was steady, and, as Mr. Gould remarked, returns came in 365 days in a year, and so it was considered to be profitable But now we have lower prices.

The fact is that in all industries the almighty dollar is more difficult to obtain now than it was, and you know that farmers cannot get the prices they used to get ten, or even five years ago. Whether it is too much cheese or too few dollars, I will leave for somebody else other than myself to solve; but the fact is true that we have now to receive less prices for the cheese than we did a little while ago. Now, what are we going to do? Are we going to say, "Give it up; drop it?" You cannot say that. That will not be the answer. The same British pluck, the same determination, the same unity of purpose will be manifested now as they have been manifested in the past. As Mr. Gould says, we cannot economize any more, but we can get down closer to the ground, and then we will probably be as successful in the future as we have been in the past, even with the lower prices. There are two or three things that we may be able to do. Ask yourself this question, Can I find cows to put into my stable that will produce more milk on the same feed than the ones I have been using? I think the answer in this country would be in the affirmative. There are men who cannot do much better than they have been doing, but there are hundreds and hundreds of men in this country supplying milk who have not studied this question, and who are unable to realize that it is possible to put two cows in the stable to do the same work that three are doing now. That is one of the things that we have to get at. If a cow does not pay its board and something more, it does not matter how broad it is or how long a pedigree it has got, it ought to be discarded and a better one put in the place of it. This can be done, but before it is done I point out to the dairy associations of this Province that it will be necessary to give the people a lot of information, because I can tell you there is a good deal of ignorance in regard to the cow. How many people think that a cow is a cow, and that is all? Some people are very anxious to get a cow with a pedigree. That is another mistake. You can't get a good pail of milk out of any pedigree. You will have the privilege of nailing the document up on the post behind your cow, but it won't fill the pail. Some of these will have to be discarded. I often think what a pity it is that some twenty years ago or so men with brains did not undertake to make what I shall call a dairy breed out of our own Canadian stock. These cows really had pedigrees, but you could not put them on paper. They were good animals for dairy purposes. One of my Scotch friends was telling me that he would have had no difficulty in finding fifty cows possessing all the points that a cow ought to possess. In Quebec, I believe, some attention has been paid to this. They have what they call their own Canadian cattle, and they are all extremely good. The same thing might have been done in this Province, and especially in Western Ontario, if somebody had set about it. That is one of the ways of lessening the cost of production, and giving ourselves a return equal to that which we had when the price of cheese was higher. The other way is by lessening the cost of the feeding. In this connection may I suggest that our farm superintendent at the Agricultural College is just now laboring with this problem to see if he cannot find such a ration that will enable us to keep our animals at a much less cost than we have been accustomed to keep them. I know how our ordinary cattle of the country have been kept, and I know how expensive it is. I know how much less it is possible to keep these animals. We are not through with our experiments at the College. Some progress has been made. You saw the account of what Mr. Rennie had done in reference to the feeding of steers last

year. You saw about the feeding of horses on the farm when they are idle. I know they are kept in the pink of condition, and Mr. Rennie claims that last winter he kept them on eight cents per day. He expects to reduce it this year to seven cents. When he claims to be able to keep the swine at the College on two cents a day per head outside the slops which they receive from the College, you will see how much can be done in this direction. We have got, as Mr. Gould says, to get down closer to the ground, and try and find if some additional details cannot be found to throw light upon this point. In these two ways we should be able to lessen the price. And then we must make the products better than we have ever made them before. You say it is not possible. I am not so sure about that. I believe it is possible. What would be the result if all the dairymen of the world were, from this time on, to make the best product that could be made? Do you think we would have too much of it? It does not increase the number of pounds when you improve the quality, but it increases the demand. There is not a man in this audience who would not consume more cheese if it were better than it is. What can be done? I do not know that anything better can be done than by continuing the education which has been given. We have schools with the best equipment that is to be found on the continent—the best buildings and machinery and utensils, and a good staff of teachers. We are able to give exactly the education that is needed on this line. The trouble is that a number of our people seem to think they do not need education, but I am glad to say that the cheese makers, at all events, are taking advantage of the opportunities that are afforded them in this direction. I was glad to hear from one of the instructors the other day that one of the young men who attended the dairy school at Guelph went into a factory this summer, and that his cheese this year have sold from one-eighth to one-quarter of a cent higher than anybody else's cheese in that section, and that the last he sent out brought half a cent a pound more than other people's. What one does in this regard, there is no reason why another should not do. I would like to point out that we have added to our equipment at the Agricultural College, so that our teachers and professors there are able to carry out experiments the year round. We have not come to definite conclusions and fixed everything in connection with dairying yet. My friend Gould knows a lot about it, but I have no doubt there are some things that he would not give a definite answer to. These things ought to be settled, if they can be, by experiments. That is what our teachers and professors are endeavoring to do at the Agricultural College. When these experiments offer to lessen the cost of production, we need not be afraid that we will not be able to hold our own. These dairy goods will be in demand so long as the world exists. What you and I want to do is to unite our forces to produce the very best goods that anybody produces, and then we will get the best of the market, whatever it is. It does not matter who comes into competition, we will be able to hold our own. This cannot be done in any other way than the way I have been suggesting. I want you to know that so long as I hold the position that I now hold, I mean to carry on that work." Mr. Dryden here gave an illustration of the effect of instruction. Two ladies, he said, were discussing the advisability of attending the lectures delivered in connection with the travelling dairy. One said she was not going; she knew all about it, and besides, the Grit Government had sent the dairy out. The other did not care whether it was a Grit or Conservative affair, she was willing to take advice and instruction. She attended the lectures, and learned a way of making butter that was better and easier than her own, and from that time on she commenced to produce an improved article. It was not long before the two women went again in company to the market. He (Mr. Dryden) knew the man who purchased the goods from the women, and that was how he was acquainted with the facts. When the lady who had been to the dairy school presented her goods, Mr. P————, the purchaser, said, "I will give you three cents a pound more for that butter." The other woman was delighted on learning that the price of butter had gone up, but was rather taken back when, on remonstrating with the buyer for offering her less than her friend, he said, "My good woman, when you make just as good butter as that (pointing to the goods of the other woman), I will give you the same price, but not until." That, said Mr. Dryden, was the kind of teach-

ing that stuck. "These are the only means," he continued, "I have to suggest at the present moment to give us relief, supposing that we are called upon to take less prices for our dairy products, but I believe they are means which will be effective. At any rate, we shall keep it up, and manifest the same pluck and perseverance as we have in the past. Before I sit down I want, with all my heart, to wish this Western Dairymen's Association greater progress, greater success and greater prosperity in the new year upon which they have entered than in any other year of their history."

The PRESIDENT remarked that he thought he had paid Mr. Dryden a very high compliment when he had alluded to the Algoma farm as a dairy school, because if it was a farm run by Mr. Dryden it would be a model farm, and consequently a dairy school; it would be one that not only taught by theory, but by example. He claimed the same thing for the Western Dairymen's Association. With all due deference to Mr. Dryden, he thought the Association was the best dairy school in this country, and he would not have considered it a libel in the least if Mr. Dryden had alluded to it as a dairy school. Referring to Mr. Dryden's remarks as to the Government grant to the Association, Mr. Pattullo said that he could only say, speaking for the directors, that not a single dollar of Government money had been misspent by the Association. They had felt conscientiously about the matter, and had made the money go just as far as possible. He complimented the Government on the fact that when they found that an Association was not giving full value for the money appropriated they stopped the grant. A case in point was the Agricultural and Arts Association. The Association had done an enormous amount of good, and he did not wish to reflect upon it, but its usefulness had been lessened because its place had been taken by another organization. The Government had stopped the grant in that case, and the action had met with the universal approval of the farmers of the country. He was sure every member of the Dairymen's Association would agree with him that whenever they ceased to give good value for the money which the Government gave them the grant should be stopped at once.

The next speaker, the President said, was Mr. Theodore Louis, of Wisconsin, and, as it was the first time he had visited this country, he would call upon Mr. Gould to introduce him to the audience.

Mr. GOULD responded by telling his hearers how he came to meet Mr. Louis first, and relating something about his life. He concluded thus: "It gives me great pleasure to-night, as I stand before this Canadian audience, to introduce my old comrade in arms, Theodore Louis. When you see Theodore you see the noblest old German that was ever galvanized into a Yankee."

Mr. LOUIS when he came forward was loudly applauded, and he entertained the audience for half an hour by describing, in graphic language, several thrilling incidents that had taken place in his life in the Rocky Mountains fifty years ago.

The convention then adjourned until next morning.

SECOND DAY—MORNING SESSION.

The PRESIDENT took the chair at nine o'clock, and the business of the meeting was commenced at once. The attendance was very large. Many farmers had driven in from the surrounding country, and the trains brought in large numbers from all parts of the Province, the east being represented as well as the west. The ground floor and first gallery of the opera house were filled with a most attentive audience.

The first business of the session was the reading of the Inspector's Annual Report. Mr. Millar's statement was as follows:

REPORT OF INSPECTOR MILLAR.

GENTLEMEN,—I take pleasure in presenting to you my fifth annual report as Instructor and Inspector of this Association.

The work of instruction was taken up during the months of April, May and the first part of June. The work assigned to me was similar to that of last season, namely, visiting central factories to give instruction in cheese-making and in using the Babcock milk tester.

In this connection I visited the following factories on the dates mentioned opposite each:

Verschoyle, April 9 and 10.
Harrietsville, April 12.
Northwood, April 15 and 16.
Bright, April 17 and 18.
Elma, April 19 and 20.
E. and W. Oxford, April 22 and 23.
Thamesford, April 24.
Nilestown, April 26 and 27.
Norwich Junction, April 29 and 30.
North Brant, May 1 and 2.
Nixon, May 3 and 4.
Attercliffe Station, May 6 and 7.
Forest, May 8 and 9.
Warwick, May 10 and 11.
Cedar Springs, May 13 and 14.
Glencoe, May 15 and 16.
West Lorne, May 17 and 18.
Blytheswood, May 20 and 21.
Harrow, May 22 and 23.
Lucan, May 27 and 28.
Ripley, May 29 and 30.
Harriston, May 31 and June 1.
Burgoyne, June 3 and 4.
Shelburne, June 5 and 6.
Stayner, June 7 and 8.
Newmarket, June 10 and 11.
Wyebridge, June 12 and 13.

Thus covering the country from the Detroit river on the west to Niagara on the east, and as far north as Penetang'.

During this course of instruction 172 cheese-makers took advantage of these meetings, an increase of fifty-two over that of last season, besides a number of prominent dairymen, as presidents of factories, managing directors, salesmen and patrons.

After completing this part of my work, I commenced the work of instruction and inspection, visiting factories according to application. There were a few applications that I could not attend to at the time specified, consequently these were cancelled.

During the season I visited 101 factories, making in all 127 visits. Our Secretary, Mr. Wheaton, visited two factories for me in the western part of the district, and Mr. White, of Hawkesville, one in the northeast.

The factories that I visited are situated in the following counties: In Oxford, eleven; Middlesex, seventeen; Lambton, four; Essex, three; Kent, three; Elgin, one; Norfolk, eight; Haldimand, one; Wentworth, two; Brant, four; Waterloo, two; Wellington, three; Perth, seventeen; Huron, three; Bruce, ten; Grey, two; Simcoe, four; Dufferin, five, and York, one.

I tested 2,436 samples of milk with the Quevenne Lactometer and 806 samples with the Babcock milk tester, making a total of 3,242 tests. Of these one sample tested ⅛ of 1 per cent. butter-fat; two samples between 1 and 2 per cent.; sixty-five samples between 2 and 3 per cent.; 687 samples between 3 and 4 per cent., and only three samples over 5 per cent. butter-fat. The richest sample I received for inspection tested 5.4 per cent., and the poorest sample .8 per cent. butter-fat. I could not take the lactometer reading of the poor sample, as it was a composite test that had been kept for me to inspect. The rich sample gave a lactometer reading of 34.6, butter-fat 5.4 per cent, solids not fat 10 per cent., total solids 15.4 per cent.; water, 84.6 per cent. This milk was delivered at a factory in the county of Bruce on the 22nd of October. A sample taken from the vat on the same date tested 4.4 per cent. butter-fat, which is the highest test I have ever made of milk taken from a vat.

Samples of milk taken from the vats during the months of April and May tested from 3 per cent. to 3.3 per cent. butter-fat; in June and July from 3.1 per cent. to 3.5 per cent.; in August and September, from 3.5 per cent. to 3.9 per cent.; October from 3.9 per cent. to 4.4 per cent., only one factory testing over 4 per cent. butter-fat. It

will be noticed that the average percentage of butter-fat is lower than in former seasons. This I believe is due to the very unfavorable season. I tested several samples of milk from herds that tested less than 2.5 per cent. butter fat. These tests were made in the month of July, when the cows were suffering from the scarcity of food and water.

In almost every section I visit I have the same question asked me, "How do you find the average in other sections?"—that is, the average pounds of milk required to make a pound of cheese. And when I reply that I find the average in every case to be higher than usual, then the question comes. "Why should it be higher? Our cows are giving scarcely any milk and consequently it should be richer in butter-fat." But this is not the case, as the above-mentioned tests show. Some patrons claim that it is on account of more tampering being done with the milk sent to cheese factories This, however, is not the case, as there was a great deal more tampering done a few years ago than at the present time. Others say that the cheesemakers are losing too much fat in the whey. This I claim to be wrong also. I have tested a good number of samples of whey during the past season and found the average loss to be $\frac{7}{10}$ of 1 per cent. butter-fat. There are several reasons for the high average, and I will endeavor to point out a few of them. The very hot weather during the first ten days of May and the wonderful growth at that time will be remembered by all present. Then the severe frosts which took place on the 11th and 12th, which cut every green leaf and blade, destroyed the hay crop all over the country, and seemed to destroy a good deal of the nutriment of the grasses and the drouth setting in early in June the pastures never recovered, and instead of having an abundant supply of food, as a good many had expected, the cows scarcely got enough to keep them alive, let alone food for the milk supply. Hence a small quantity of milk, and that in many cases of a poor quality. This season has been noted for sudden changes from heat to cold and *vice versa*. All these things have a tendency to the production of a poor quality of milk. Then, owing to the low prices for cheese, especially during the first part of the season, the patron was not making as much out of his cows as he had expected, and the result was that he grew careless about attending to the milking of the cows. They were milked whenever it was convenient, the milk very often being poured into the milk can without straining. As for aerating it, he said: "At the present price of milk it is not worth the time it would take to do it," and so it remained in the can just as it had been milked until the morning mess was poured in in the same manner and was taken to the cheese factory. The cheesemaker might find fault with the condition of it, yet in ninety-nine cases out of a hundred he would accept the milk instead of rejecting it. Then another reason is the recent change in the system of weighing cheese for the export trade, viz., one-half pound extra on each cheese. A number of cheesemakers also have the habit of ripening or maturing the milk too much before setting. By doing so it requires more milk to make a pound of cheese.

In summing up I will give briefly four reasons that might cause the high averages of the the past season: 1st, the unfavorable season; 2nd, want of aeration; 3rd, change in the system of weighing cheese; 4th, maturing milk too far before setting. The patrons can remedy the first two causes, the first by supplying suitable fodder for their cows, and the second by giving due attention to the care of the milk and seeing that it is thoroughly strained, aired and cooled immediately after milking; also remembering that the morning's mess requires airing just as much as that of the evening. The third I will leave with you, as a great deal may be said on both sides of the question. The cheesemaker must remedy the fourth if he would keep up the reputation of his factory and his own as a cheese-maker.

I visited the farms of twenty-four patrons to get samples of milk as taken from the cows, and twenty-one of these appeared before magistrates charged with tampering with the milk sent to factories, eighteen of these pleaded guilty, the other three were tried and convicted. The fines ran from five dollars to thirty dollars and costs. One appealed to the General Sessions at Woodstock, but at the time of the court did not appear, so the appeal was dismissed with costs. Nine of the charges were for diluting with water, ten for taking cream, and two for keeping back strippings or the last part of the milking.

Three of these were in the County of Oxford, three in Middlesex, one in Kent, four in Perth, one in Waterloo, three in Huron, three in Bruce, one in Grey and two in Dufferin.

Out of the hundred and one factories I visited there were seventy-nine Babcock milk testers in use. The influence of these upon some of the most unprincipled-patrons is quite noticeable, and in a few years I hope to see them in use in every factory in the Province, and to see every factory paying for milk according to quality. Thirteen factories I visited were paying for the milk according to quality. Altogether I think there is about the same number of factories paying for milk by quality as in former years, but the question arises: If the system is right why does the number not increase? Various reasons might be given for this and I shall mention a few. In some cases factorymen adopt this system before they have educated their patrons along this line, so that not knowing anything of the test, all sorts of stories are soon circulated amongst the patrons. Some claim that it required the skill of a chemist to successfully make the test, and when a slight variation takes place in their weekly test, instead of attributing this to their cows they are at once covinced that some mistake has been made in the test, and that they are being cheated The result is that there is general dissatisfaction at the next annnal meeting, and the system is voted out Again, one patron says, "Mr. Jones takes good care of his cows; he has a fine herd; he feeds them well and sees that they have an abundant supply of good water; he sends the milk to a factory where they pay for it according to quality and the milk tests 3 4 per cent. butter-fat. His neighbor, Mr. Brown, a rather shiftless farmer with a poor herd of ill-fed cows, sends milk to the same factory, and lo! his milk tests 3 8 per cent." But notice that Mr. Brown only gets about fifty per cent. of the milk per cow that his neighbor, Mr. Jones, gets, yet farmer Jones is dissatisfied with the result of the test. I have had just such a case come under my notice, and it took a good deal of explaining to get Mr. Jones to see that he was getting more pounds of butter-fat than his neighbor, although his test was a fraction lower. Again, the owner of a private factory adopts this system and as soon as the neighboring factorymen hear of it, they are off into his territory to canvas for patrons, and tell them what a farce this Babcock tester is; that it will rob the patron to make the cheeee-maker and manufacturer rich, and the result is that this progressive dairyman has to go back to the old system of pooling milk or go out of the business Other factorymen while claiming that the system is all right drop it on account of the extra expense connected therewith; the cheese-makers refuse to do the testing unless paid for doing so, and so the company must manufacture cheese as cheaply as their neighbors or lose patronage. This system will never be a complete success until it is adopted by every factory in the Province.

The great majority of the factories that I visited were in good order, well kept, clean and tidy, but I am sorry to say that a number were positively dirty, with old tumbled-down buildings that were not fit to make cheese in, and the sanitary condition was not at all what is to be desired. It was utterly impossible to make fine goods, as everything about the place was full of the stench. In fact I believe the maker himself must have been "off flavor," or he would not stay in the place very long. I would recommend that a few barrels of hot lime be kept at every factory to scatter around and under the buildings as it is a splendid disinfectant. At a recent annnal meeting of the Provincial Health Association several interesting papers were read referring particularly to the wholesomeness of milk and its products, and to the sanitary conditions of cheese and butter factories. I am glad that our medical authorities are taking notice of these things and discussing them at their public meetings. It is sure to do much good and I trust the officers of the local boards of health will be diligent in doing their duty and compel managers of all kinds of factories to keep their buildings and premises in proper condition.

Of the factories I visited, seventeen kept the whey, and it was fed to hogs somewhere in the vicinity of the factory. The other eighty-four returned the whey to the patrons, using the milk cans to carry it. This system of returning whey in the milk cans is a

great evil, and hangs like a mill-stone around the neck of the dairy business, and dairymen will never attain to the high point of perfection that is within their reach until the evil has been rooted out entirely Before we can see the full benefit of feeding the whey at the factories the system must become general. The fact that about twenty-five factories west of Toronto feed the whey at or near the factory does not make much difference in the price paid for our cheese, yet if one and all were following that practice there would be a decided advance in favor of Western cheese. It would not only put thousands of dollars in the pockets of the dairymen each year, but our reputation, which should be of greater interest to us, would go forward in rapid strides.

I had the pleasure of attending the Fat Stock and Dairy Show held at Guelph in December. There were eleven cows competing in the milking test, and a great deal of interest was taken in it. This is a new departure, and is a step in the right direction, and I think will be the means of raising the standard of our dairy herds.

I take this opportunity of thanking the officers of this Association and dairymen in general for the kindness and assistance rendered to me during the past season.

Your obedient servant,

T. B. Millar.

The President: I am sure you will agree with me, that the report which you have just heard is a very interesting and valuable one. Allow me to say on behalf of the directors—I am sure I speak for them all—that Mr. Millar has proved a very valuable Inspector. I think he has done his work extremely well. All of you know that he is a thorough-going maker himself, and very competent to fill all the duties of his important position. I would like to hear, with reference to his paper, the views of some of the dairymen in the districts that he has visited. If there is any fault to find with him or with the Association, or with anything, any suggestions of any kind to make, we would like to have them now. I will give you a few minutes for brief remarks.

Mr. Blayney praised Mr. Millar's work, and referred to him as the right man in the right place.

S. R. Payne strongly endorsed the Inspector's remarks respecting the necessity of keeping factories clean, and he thought too much stress could not be placed upon the importance of it. He felt that there were a good many factories in which that duty was apt to be neglected. He also agreed with the Inspector in regard to the Babcock test. He had found that that test was a decided advantage to the patrons and cheese-makers, and where it had been introduced in Eastern Ontario it had been kept going constantly. Its use was growing slowly and surely.

The President remarked that they were glad to hear Mr. Payne especially, as he came from the eastern part of the Province.

Mr. Payne replied that he was present in order to receive information along the line of the cheese business and creamery work.

The President: I would like to call attention to one thing in the Inspector's report. Although we pay his salary and expenses a great deal of the Inspector's time is wasted in chasing down dishonest patrons who water their milk. I should like to see that stopped entirely. I don't think it makes very much difference now whether a patron waters his milk or not. I don't think we should waste the funds of the Association chasing these people, because you can stop it. The remedy is all in your own hands if you adopt the Babcock tester. The idea of us wasting the government funds paying Mr. Millar to run all over the country looking after dishonest people when you can make it so yourselves that there won't be a dishonest patron in Western Ontario, because whenever he becomes dishonest he hits himself where he is most sensitive—in his own pocket. I propose that, in future, you should ask the directors of the Association to spend the money that they pay Mr. Millar and other inspectors in acting as instructors, and not in acting as detectives, which we should not need.

J. M. Shuttleworth: It is very important that the products of Canada should be kept at the very highest point. Adulteration discourages honest men. I think it would be wise to appoint a man for the very purpose of investigating all cases where the cheese-maker has found that the milk has been adulterated in any way. It is often a very ticklish point for a cheese-maker who is hired by the patrons to accuse one of them of dishonesty if he cannot prove it directly, and sometimes there is a disinclination on the part of the patrons—even the honest men—to support the cheese-maker, because the dishonest man is one of their neighbors. I would suggest that a man should be appointed for the purpose of chasing down these men, rather than let our own inspector go everywhere and act as a detective.

KEEP WHEY OUT OF THE MILK CANS.

Thos. Ballantyne: I have always said pretty much what our President has said to you this morning. You cannot have proper inspection under any circumstances unless it is done by the managers of the factories. Before we had the Babcock tester the means of detecting adulteration were not so simple and so reliable as they are to-day; but even then I held it was a matter of the first importance to look after the milk coming to the factory, and to see, as far as it was possible with the appliances we then had, that we got pure milk, and the Act was so framed to deal with these matters that the privilege was granted the managers of the factory to go to the farm and see the cows milked, and to compare that sample with others. So that you see I believe that we will never have thorough inspection of milk unless it is done by the managers of the factories. The inspector can only visit the factories at intervals. Is there any one of us so simple as to believe that the fact that the inspector might some time in the season drop in on a factory will prevent those that are in the habit of skimming their milk from doing so? I don't think so. With the Babcock tester there is now no difficulty, and there should be no necessity, as Mr. Pattullo says, for an inspector to be hunting up dishonest patrons. We have a cure in our own hands that is perfectly reliable and accurate—no mistake about it. It is as correct as a chemical analysis, but of course I can realize that it is not such a simple matter to get the Babcock tester introduced into every factory. Of course there are some factories at which, if I were a patron, I would not care to have my milk put through the Babcock test. There are some factories where the maker is not capable of carrying out that test—it requires care and knowledge. Our large factories, as a rule, have good men; but there are others where it would be unsafe for the patrons to be compelled to accept the Babcock test. Where there is a competent maker there is no reason why the Babcock tester should not be used. It is the only fair way. There is another point to which the inspector in his report referred, and which is of the greatest importance. I do hope that an organized effort will be made during the ensuing season by which the representatives of the factories will try and adopt a plan to discontinue sending back sour whey in the cans. I speak whereof I know. Every cheese-maker knows my enthusiasm for everything connected with the making of cheese, and I have taken this position that I would not like to take the responsibility of managing a factory where sour whey was taken back in the cans. In the first place, sour whey is comparatively of no value at all for feeding to hogs. I undertake to say that if a man were to divide his hogs and give the dish washings to one half and the sour whey to the other, he would find that they both got on alike. But look at the other side of the question. If you were a citizen of Woodstock, for instance, would you buy the milk that you used for the ordinary purposes of the table from a man who was in the habit of using his cans for carrying sour whey? No; you would indignantly refuse it. It is just as important that the milk for cheese should be clean and sweet. You all know about the drop in prices last spring. You know it occurred when the new cheese came on to the market. There was a good deal of old cheese on hand. I was in England at the time, and had opportunities of testing our cheese that I never had before.

The customers with whom I had dealings had a great many factories' make on hand that I had shipped. I had a memorandum with me of every cheese and every factory, and all the circumstances. On the examination of these cheese what did I find? I found that all cheese that had been shipped from factories where the whey was not taken back were in perfect condition; but, on the other hand, the cheese shipped by factories which returned the whey in the cans were in almost every case stinking. I say that unreservedly. When the cheese are first shipped from this country the bad flavors have not had time to develop, but when they have been kept by the dealers for some time, as they often have to keep them, these flavors develop, and you can scarcely realize what vile cheese is the result. I have been almost frightened to buy cheese where the whey is taken back from the factory. In the neighborhood of Woodstock there are a number of factories that do not do it, and the cheese of these factories is always in demand, and always sells at a premium. Buyers always try to get hold of that cheese. But you can't build up a reputation for a whole district on two or three factories. I do hope that some system will be adopted during the ensuing season by which this practice will be discontinued. I think one representative should be selected from each factory to meet and try and agree upon a plan. Let us do our best to improve the quality of our cheese, and I know of nothing that would assist toward this end more than paying by the Babcock tester, and discontinuing the filthy practice of sending home sour whey in the same cans that are to be used to bring back the milk on the following morning. I know it is said, and truthfully said, that there is nothing to prevent cans being cleaned properly in which the whey has been carried. Our experience is that some do it; but there are others who neglect to do it. Some of the sour germs are left in the can, and these rapidly develop and generate a nasty and horrible flavor, which spoils the cheese. The safest and best way is to abolish altogether the carrying of whey in the cans. I think Mr. Millar has done his work well—very well; but he has not been able to do all that he should do. The factories have not all improved to that extent which those of us who are about them and have had to do with them feel is necessary. You say you have a good maker. I say the best maker we have to-day would be a better maker if he were to visit some other factory in his neighborhood, or if Mr. Millar or some other inspector were to visit him. He may in some slight detail have gone wrong and not be aware of it. He may have kept to himself until he does not really know the finest goods when he sees them. There is no way that I know of that is more likely to improve the quality than visits of this description. I hope the new directors will take up the scheme, and will divide the western district into sub-districts and secure a regular system of inspection.

These conventions are most important. They give us an enthusiasm that we otherwise possibly would not have—public attention is directed to the industry—but there never was a maker made at a convention. If there is one, I would like to see him. I never met him. Many years ago when I travelled around the factories to a larger extent than I am doing to-day, I found many factories off the track, but I never found one that did not receive me most cordially. I never found one that was not trying to make the best cheese But they had great difficulties to contend with. They had no control over the milk, and the patrons did not realize the importance of the most scrupulous cleanliness in connection with delivering it. I never saw such pitiful faces as the cheese-makers used to make when the cheese turned out bad, and I always found them willing to learn. There is a percentage of our goods in Western Ontario that is I think to-day as fine as any made, but I am sorry to say that there is more not so fine. We were the first in Western Ontario to start the system of inspection, which has spread all over the world, and now let us lend our aid to bring the system to perfection. I do not know of anything better, unless it were one or two large central schools, in connection with this inspection, where the makers could all go and learn from first-class men who thoroughly understand all the principles of cheese-making. These are the great points. We may come here and talk this and talk that, but unless it leads to an improvement in the quality of the article produced it will be useless. I thank you for the opportunity to make these few remarks in connection with Mr. Millar's report. I think Mr. Millar is a first-class man. He has done his duty well, and I hope we will be able to organize

these local boards or centres, or call them what you like. Perhaps it would be best in connection with our cheese fairs, and that he should superintend all these, and that we should have a staff of men visiting through the country in whom the cheese-makers have confidence, and who could be of assistance in instructing and directing them. We cannot improve the quality too much. Quality! Quality! Quality! If we are to retain our position, it dairying is to be profitable, everything that can reasonably be done must be done to improve the quality of the cheese turned out.

COMMITTEES.

The following committees were then appointed:

Resolutions: The President, HAROLD EAGLE, T. BALLANTYNE, ROBT. MCCROW and the Secretary.

Nominating Committee: J. A. JAMES, ROBT. JOHNSTON, R. ROBERTSON, R. M. BALLANTYNE and G. E. GOODHAND.

Utensils: T. B. MILLAR, J. F. WILLIAMS and J. A. RUDDICK.

THE DAIRY COW AND WHERE TO FIND HER.

Mr. JOHN GOULD, of Aurora Station, Ohio, was called upon and gave the following address: Every decade in dairy farming propounds the query "The dairy cow and where to find her?" and when, after long search, she is found, the drift of the march of events in our progress has carried us far in advance, and this cow does not fill the wants of the inquirer, and so it is the ever and over repeated inquiry: Where can I get a cow that makes me profit, and makes me rich? The inhabitants of this world are travelling a fast journey, and every force, element, and power in, and on the earth, and under the earth and in the air and space above the earth, are all put into requisition to propel us forward, and secure us a prize of some sort, designated by that one word "success," but the interpretation of it is as varied, as are the conceptions of its interpreters and seekers.

Each decade has had its answer, but the answer was only for the then, or now, and it has failed for the to-morrow. In this fast travelling world, the conditions change so rapidly that the solution of a problem only suffices for that one condition, and yet the problems are only changes rung upon the same old strings. We screw up the tension a little, we put more resin on the bow, we pull it with a little more skill, and its the same instrument; the tune may be, we say, wholly a new one, yet it is the same notes rearranged, played in faster time. The feet of the dancers go faster, and in the rush we say "We live in a fast age, how prosy it must have been twenty years ago!" And yet it is but a new combination of old forces, old energies directed in new channels, enlivened with steam and gas, and energized with currents of electricity, and more of nature's latent forces drafted into service, and tortured into fiercer activity.

In this march of progress we take upon ourselves much self-aggrandisement—nature's noblemen, and that sort of gilt-edged verbiage—but when we come to look the matter up, it is difficult to see in what way we have made and gained great advantage, except that the world has moved on and we have moved with it, and those who have not, are hid from sight. Every new invention, and every advance has been met with a new factor in competition; and each new advance has called out a yet fuller measure of intelligence to meet new activities, until to-day the battle of life is a battle of intellects, and the economics of farming to-day is a display of brain power, instead of an exhibition of force and brawn—sweat of the brow in fact, rather than sweat of the back, which in 1896 is shoveling sand, nothing more.

What is true of this hemisphere is comparatively true the world over. The farmers of the world are now all working along parallel lines, and in similar pursuits. It is now more than a local condition that confronts us, and to answer the problem of "This dairy cow and where to find her," answers it for all. This convention here to day, in Woodstock, is solving a problem for you, and indirectly solving it for the world as well. There is a universality of thought to-day as well as cheap freight rates, and no farmer on the globe has a positive advantage more than momentarily. This man is no longer in competition with his neighbor, but with everyone's neighbor, and to day it is into the common granary of the world that we put our products and we take out our share; and this whole question settles down at once to this proposition: can I produce a thing cheaper, make it better, and get it before the consumer quicker, than my neighbor, though this neighbor may live in the antipodes? The question I am to talk to is one of adjustment as well as of competition.

A shortage now affects us but little; there is an overplus somewhere that will average things. The great drouth of the past year made neither farm produce or dairy produce higher, and I am frank enough to say that I do not look very soon for the return of the old prices. Have you ever thought about this: That the farmers to-day are raising the same kinds of crops and animals, and marketing the same varieties of farm produce they were 2,000 years ago. The world has been canvassed for better kinds of crops, but still we raise the same grains, and roots and grasses, that were considered best 300 or a 1,000 years ago. The world has been hunted over for animals, but has any change been made? Cows are still cows, and horses are the same, and sheep, hogs and oxen, yet constitute the list. All that can be said is that there are good, poor, and average live stock. We plow ground, raise the same crops that, so far as I know, Adam did—only we employ different agencies in mechanism, feed the crops quick-acting phosphates to hasten their ripening, harvest them with lightning activity and ship them across a continent, before the man of fifty years ago could have gotten the rust off from his sickle and a new raw hide thong tied into his flail. The whole thing, you see, settles down into calculation, adaptation, and brain power. The latter must be supreme, as it is now the mastering of details, working from cause to effect, the better preparation to play our part, the playing of the same old tunes upon a more highly wrought machine, and our conceptions of the tunes intensified, and the notes so blended, that the old tune is fairly disguised, and we rise to a technique that moulds "Old Lang Syne," into a Wagner opera, and we call this success.

"The dairy cow and where to find her," is a case in point. Where have we found her in the past? and what was her similitude? It cannot be denied that, for the last two hundred years, even back as far as the literature of the dairy cow goes, she has been in a general way any different than now, but in specific ways she has undergone classification—that is, she has by selection and environment been so fashioned that she and her progeny have family resemblances, and peculiar qualities, so that in contradistinction to the cow of the back woods—the yellow, black, spotted and brindle beast of "slashing" and frontier—we have breeds of cows, or rather cattle, each with some distinguishing trait, peculiarity, or marking, and so are adapted in a greater or less degree to the wants of the dairyman. These cows, while of greater worth to the dairyman than a herd of "rustlers," are in flesh and blood still closely akin to the latter, for a cow wherever we find her is a mother beast, actuated by the same impulses of nature, governed by the same laws, provided with the same means of nourishing her young, and differs in degree only from her thoroughbred, blue-blood sister in not being quite so artificially endowed in developed functions, less milk, possibly hardly so rich in solids, a shorter milking period, possibly not so perfect an assimilation of foods, and more likely to give her owner a brindle calf as increase. In contrast, her sister, whom we are striving to own, is, by having her every want supplied and her feeding and care practically taken out of the hands of nature, made more artificial, which is only another term to convey the information that this cow is more and more dependent upon the hand that feeds her and been removed from the struggle with nature—feast and famine, heat and cold, drouths and floods, pests of all kinds—the very combinations that have given us Cherokee cows, razor-back hogs, Bronco

horses and Digger Indians, nature's contributions to the common stock. In other words, the expert dairyman has by this artificial supplanting of nature's way of providing, been enabled to change the currents of this cow's life, and turn the current of life forces, hitherto used as life protection, and preservation, into channels of production, and by stimulation, and bringing in aids at every point to enlarge this cow's office of motherhood, has produced the cow that gives large messes of milk and for ten months, where nature's cow gives only a few quarts a day, and that hardly more than three months at best.

You will see by this that I am not over confident that this cow we need and seek will be found very far from home. certainly not out of our immediate locality, for where there is no guiding hand to control this getting away from nature, there will be little development; yet here I wish to say, that where high development has been reached in the dairy, to withdraw that guidance and artificial culture, and let these cattle drift back to what are actually natural conditions, is to throw away or abandon to helplessness; for in the past by feeding and pampering, this animal has become to be actually dependant, and to place her side by side with the brindle cow that has had many a hard wrestle with nature, and like an old campaigner of the war become an adept forager, makes her even more worthless, and she soon degenerates into a scrub of scrubs. And when at last the final transformation of this cow into a Bologna chrysalis, a thing in form of dairy produce will have been made, over which there will be no competition in the market, for a Bologna is the final "dead level," that links together an unprofitable past to a future which to thousands of careless dairymen will bring only the same old pangs of disappointment.

Where have we found this dairy cow in the past, and what did she look like? You will agree with me that we found her largely taking care of herself. It possibly may not be without the recollection of any man here before me to remember how that dairy cow of the past looked. We have all stood by her side many a time, and I do not wish to disclaim against that old cow to-day, because it was she that has given Canada and the United States their pioneer dairy wealth. How did that cow look? You remember she was spotted and she weighed anywhere from 700 to 1,400 pounds. She was black, she was white, she was spotted, she was every color, but green. I believe I never saw a green cow. I have seen green dairymen. (Laughter). She was all forms—dairy type, beef type, and several other types that have not been mentioned in the book. She was a razor-backed hog of the woods in one sense, and yet that cow had possibilities in her that the dairyman did not comprehend, and had he comprehended, she might have made a better cow and given us a dairy breed. If the men of the past had had the intelligence of the men of to-day, that cow of our meadows and pastures might have been developed into an animal equal to the thoroughbreds of to-day, and with a constitution that would have carried her through all those diseases which cost us millions of dollars on the other side, and which so often go into the pockets of the veterinaries. This cow had possibilities in her that might have been developed with better care. If she had been fed and treated as a thoroughbred, she would have come nearly being a thoroughbred. How did we care for her? She was turned out in the early spring upon the meadows and pastures to get her living, and she got it as best she could till fall, and then we dried her off, and she got the best living she could on stack hay, straw, and north wind. We sometimes tied her up in stables that were a little colder than outside, and we had to get a "crow" bar to pry her up in the morning. (Laughter.) What was the breeding of this cow? I said a moment ago that she was a thoroughbred of unknown breeding. What breeding did we get in succeeding generations? We wanted a cow that was big, and we asked of her all sorts of things, yet we did not give this cow a single opportunity to do any of them. We bred her as miscellaneously as we treated her. We wondered why the cows were of all shapes and all conformations. Not a sign of breeding for the best was admitted, and then we said that the fates were against us, and in March you remember we used to begin to sell cow hides for dairy produce. (Laughter.) This was like cutting off a supply that never was recouped. I unfortunately came away without my diagrams, and I am rather at a standstill to convey my exact meaning. I find my friend Theodore Louis has put up here a

capital illustration of what I want to say. Mr. Louis has put up his hog charts depicting a north-west hog—one that will answer for hog or bear, as the hunter may elect. (Great laughter.) One is a beef hog, I see, and the other is a hog of the dairy type. (Great laughter.) The farmer of the future must be a man who keeps a dairy cow, and the purpose of that cow must be to give milk, and not beef. The time has come when the man who is making beef from cows is not making very much money. I want to point out that whilst a man with a 1,000 pound steer is making a pound of actual human food, the man with the dairy cow is turning out four pounds of human food as milk, all digestable. Somebody is going to say that the steer will gain as fast in beef as the cow will give in milk solids. I assert in reply that a man who drinks a quart of milk has really eaten a pound of beef-steak, because there is no waste. A good cow in a year will give 700 pounds of solids—the same units of food nutrients that you will get from four steers weighing 1,000 pounds each. We want this cow to do this, and to do it she must be bred and fed for a specific purpose. If a man wants to make beef, all right. I wish a few of the dairymen would conclude that beef making is their especial forte, and let us have the dairy field. I want a dairy cow trained and bred to do a certain work. You will find men raising big cows so that when they get through with them they can sell them for *steer* beef. The fact that they have grown large is evidence that they have been putting food on their backs instead of in the milk. What we want is dairy type. What we want is a breed along certain specific lines, and let the butcher have the rest. What is the form of this dairy cow? I have an idea that we have got to bring in the question of individuality in the selection of our dairy cows. The average dairy cow in Ohio produced about 3,600 pounds of milk. Now a cow that only gives you 3,600 pounds of milk is a boarder upon you, and you are putting more food into that cow than you are getting money out of her. You see she is simply turning the feed of your farm into milk. It doesn't hurt to repeat old truths. In our rush to get something new we often forget old things that are better for us than the new things. The great trouble with some of us is that so many of the things that we know are not facts, and it does us good to go back to the Sermon on the Mount, and see whether we are Christians or not, or whether we are built up of dogmas, etc. I want to get back to emphasize some of these old truths. I said that speed and strength in a horse were different things, but that speed in a horse and milk in a cow are the same thing—products of nerve force. A thousand pounds should be the limit of her weight. I put the limit at a thousand pounds because I find that a thousand pound cow with good treatment will grow larger—perhaps one hundred pounds more. We must have a cow with a good udder. She may have a long pedigree, but she is of no value unless she has milk. She must also have a good bright eye. I put fifty of the one hundred points on the udder and the eye. I base my calculations upon these two points. Why do I say the eye? Have you ever met with a cow with a dull flat eye that was ever good for anything? She has no nerve power. She just simply eats, sleeps, and exists—that is all. What I want is a cow with nerve power, and nerve power and knowledge go with nerve development, and brain development is always indicated by a good bold eye. When I see the eye standing out prominently from the head and bright, then I know this cow has brain power, nerve power; and if she has got the udder so as to be able to make milk, then I can get it out of her by good care and treatment. Did you ever make a cow over? Didn't she die the same kind of a cow that she came into your dairy? Without udder development we shall not get money. I want the eye bright and prominent, and I want the forehead broad between the eyes, and a broad muzzle with two good nostrils in it. I want strong jaw power. She must have strong masticating power. I want my cow wide apart between the fore legs. My cow, to be a good milker, must have a large flow of blood, and to have a large flow of blood she must have large vital organs—heart and lungs. If I get a constricted form, legs near together, then I have no place in which to put these large vital organs. You want your cow wide between the fore legs so that she will have large vital action. I want an animal with a strong back bone. I dont want a cow that is tight built. I want wide spine spacing. I want a cow with wide hips. This cow is a mother, and she must have room for the office of motherhood, and that is one of the best signs I know of, that this cow has got the organs that adapt her to be a mother. I don't want this cow with a

straight line underneath. I want her to carry a great big silo, and she doesn't do it unless she has got a large sagging underline. I don't want her to have barrel ribs at all. I want the ribs wide apart, and then she can take fifty pounds of ensilage into her stomach, or dry feed or grass in proportion. She will then have room to assimilate it into her system. I want my cow to give me reasonably rich milk. You can judge of this approximately by two or three external signs, such as by the secretions of the ear. If this is absent, your cow will be a skim milker almost invariably. Nothing is absolute, however, except guaranteed by test. We are driving very fast towards the days when every man who sells milk will be paid for it according to what it is worth in solids. It would be one of the greatest boons to the dairy industry of Canada to-day if all the dairy farmers would say, "Give us the test system, and we will take what our cows give, rather than ask our neighbor to share with us in what his dairy gives him." Then we would throw out the skim milk cows, and not hug them to our hearts as our dearest idols. I want to be emphatic about the quality of the milk, because it is going to be the criterion by which the farmer of the future is going to get his money out of the dairy—by the solids the cow gives rather than by the pounds of milk she gives. I never like to see a cow that is round and full right in front of the hip bones. Where you find her sunk in here, you are pretty sure to find a good cow. Now, where do you find this dairy cow of which I have been speaking? You will find her in all kinds of breeds and in all colors. I shall not to-day say anything about the breeds of cows. That is for you to select, governed by what your market is demanding of you, and you must answer for yourselves.

Having found this cow—I don't care what her breed is—how shall we breed her in order to maintain the quality that we want? First, we want to breed these cows on our own farms. If we buy from a neighbor he is as honest as we are, and not more so. (Laughter.) While he tells us he is selling us the best cow he ever had, we may find out within a week after we have completed the purchase that he was not telling the whole truth. A man who wishes to attain perfection to-day must breed his own cows. Let us take the best we have got, and let us decide upon some line of action. You say, "I have tried that and it failed." I know it failed. Why? Because you bred a new influence every year into that herd, and the end was that you had more breed influences than you had cow's influence when you got through. I don't want you to inbreed your dairy, but I do want you to breed them in line. I want you to select an animal as the head of your herd, and use that sire for two generations at least, and get seventy-five per cent. of the blood you want. Then go outside and bring in a strain of the same blood, and then by throwing out the culls every year, we shall be able to get an average of five, six and seven thousand pounds of milk from our cows. I believe we should do our breeding on these lines. Another thing: do not mix breeds; do not cross breeds. What are you going to do the next time? You have got to go back to either one breed or the other, and so you get back to the original breed again. If you like the Holstein, stay with the Holstein; if you have Jersey, stick to the Jersey. Stay by your breeding, stay by the breed, and do not make succotash of the whole business. The trouble with our cows to-day is, they are too well bred and a mix up of all breeds. We have too many breeds and influences, and our cows do not know what to do with the feed. Way back there is one influence wants to make beef, another skim milk, another butter-fat, another eats what is put before it, asking no questions, and you can look after the rest yourself, and the result is we have got these 3,000 pound cows. Who is responsible for it? It is not the cow. She is just as you make her. When a man begins to get better cows, and pick up his farm and make it better, he becomes a student, and he gets interested in those hidden things, and he begins to find out that this cow is a great mother, and that all success comes from catering to that ideal of motherhood, and when you get to that you will have a dairy.

FROM THE FARROWING PEN TO THE BLOCK.

Mr. Theodore Louis, of Wisconsin, followed with a most interesting address on the breeding and rearing of swine, which was characterized by a practical thoroughness in the handling of the subject, which held the attention of the audience for an hour. Mr. Louis took for his subject, "From the Farrowing Pen to the Block." He said: I know full well that I have come to a place where we may look for farmers and dairymen of the highest order of intelligence. Your products and your live stock speak loudly of this. The young men who have graduated in your schools and on your farms are taking high positions in the United States, and bringing about the best results, so far as agriculture is concerned. Your able President made a very potent suggestion yesterday when he said that you could ill afford to let your intellectual young men that are engaged in your dairy business go to the United States and elsewhere for the want of salary. To approach the subject of swine husbandry before a dairy meeting always seems strange, and yet no dairyman will deny the fact, if he has learned the art of feeding, if he has learned to use all his by-product in a manner that will pay him, that the hog is a paying investment as an adjunct to the dairy. And how few there are who really understand the art of feeding. How few there are among the many that know how to feed the by-product of the dairy intelligently. How many there are who seem to have the idea that the more the hogs can put away, the more whey or milk the hogs can consume, the better. That seems to be the fault of a great many dairymen; they do not consider whether the hog can assimilate all it eats. But I am not going to take up the subject of feeding this morning. I think that shelter should be the first consideration. I have before me an audience of, say a thousand farmers. If I were to ask all those who have good shelter for their hogs to raise their hands, I fear that only forty per cent. of the thousand would raise their hands. There seems to be the idea that the hog does not need any shelter—that a hog is a hog, and that he is the scavenger of the farm. I am a stranger in your country, and I do not know what you do or do not have; but I daresay that as many hogs in this Province sleep in straw piles as in the States. I daresay that as many hogs have simply a roof over them and a wire fence or a rail fence at the sides for the wind to blow through. The man who leaves his hogs without shelter, and lets them sleep in a straw pile, is the man who is constantly asking the questions, "Why do my hogs get lame?" "Why do they cough?" "What ails my hogs?" If you were the editor of an agricultural paper, you would find your desk strewn with just such questions as these. Have you ever thought—you, who let your hogs sleep in a straw pile—why they cough, when you look at them sleeping all huddled together, becoming in a heated condition, and sweating through the pile heat from below, and a cold, chilly air striking them from above? Have you ever considered why they cough? Or, if you sleep them upon floors simply sheltered where the bedding is, the bedding never being removed perhaps for months, and more constantly being added until it becomes dusty, and every time your hogs disturb the nest the dust rises, have you ever wondered what ails your hogs when they cough? I could name a hundred different conditions that are held before the hog as resting places that are most detrimental to his life and to the future offspring. When once a disease, especially those of lung origin, is created within our breeding hog, let me say it will be handed down for generations to come. What kind of shelter should we have for our hogs? From the early days, although I had but few dollars or conveniences to meet my wants, I made a close study of the conditions which would be best for the hog. You consider very closely what will be best for your cows. You study out what stables and stalls will give your cows most comfort. Did you ever consider that comfort is required for any animal that is a flesh-producing animal, and that comfort means the same to the hog precisely as it does to any other animal? When I first went into Minnesota in connection with the institute work, I found that the farmers had admirable stables for their horses and splendid barns for their cows, but there were no hogs, and when the hogs came to hand there was no shelter for them. Yet these men burned thousands of tons of straw every year upon

their farms. I advised them to press their straw into bales, lay a foundation of stone, then put the straw bales upon it brick fashion (a ton of straw would lay a wall eighteen feet long and six feet high), lay boards across the top, and cover them with clay mortar. This, I guaranteed, would make a warm shelter for the hogs, even if the temperature were down to forty degrees below zero. Many of them followed my advice, and I am gratified to say they are doing well.

On my own place I have always found a 7x8 house—a shanty-like house—will give better satisfaction for the feeding of and shelter for breeding animals than anything else. A pen 7x8 in dimensions will sleep comfortably four hogs or five in winter. They can lay one along side of the other and not become heated. It will make a comfortable breeding pen if there is a fender inside of it. I used to lay scantling right on the ground (2x4), set a corner post up at each corner, then board it round about and put on a shanty-like roof. I want it seven feet high in front and five feet at the rear. I want the door cut at least four feet high and hung on leather hinges. I am not talking here simply to the man who is financially able to do things. It has been customary for me to feel that I speak to all classes of farmers when I come before a convention or an institute audience. I feel that I come before a class of men who are not all financially able to do things, and it is often a leader in that direction that is very valuable to them. I want a door say four feet high, so that I can get into the stable at the time of breeding, when probably my assistance is needed at farrowing time. Sometimes a man takes me out to his farm to see his hogs. He shows me them. He says, "If you will get right down on your hands you will see my sow." I don't want to be kneeling down when I want to see a sow. It is astonishing what conditions we do find. In Minnesota I once went up to the farm of a Scotchman. He had a fine daughter, like most Scotchmen have, and he says to her: "Lassie, go and let out the hogs." And the lassie went into a hole in the straw pile and out came the hogs. Well, he had stately barns and stately stables for his horses and his cows. Hog houses, and especially on a dairy farm, should be erected with a view to elevation where there will be a natural drainage. I do not approve in my section of the country, where our temperature falls to thirty degrees below zero, and where our winter snows are heavy, of a double hog pen with an alley in the centre through. One side of a hog house so built must naturally face either the west or the north, and as our prevailing winds are from the west or the north during the winter, it always gives the hog house a cold condition. In the spring of the year, when we have a double hog house with a double roof, when the snow melts the yards in front of the hog house are always muddy. On the north side of the hog house they are not thawed out until the first of May. This is one of the reasons why I say we should have a house on lofty ground so that the yards may be kept clean and dry. For convenience, as an illustration, I have brought my charts along. (Mr. Louis here unfolded a large chart showing the plan and superstructure of his hog house, which he said was 100 feet long, with an addition of a feed and cook house, and proceeded to explain its advantages). The alleys were, he said, five feet wide, and there was a fender, raised eight inches from the floor, in each stall. He pointed out the desirability of having secure fenders to prevent the sows from overlying their young, and asserted that a man could ill afford to be without a fender. The gates were 2x3, and had a rope and pulley attachment to facilitate the opening. When they wanted to feed the hogs they allowed just as many into the feeding pen as they had enough room for. He urged the importance of having sufficient trough room, and remarked that he had been surprised to go on to farms and find ten hogs expected to eat out of a trough a foot deep and four or five feet long. The result was that the stouter pigs got the lion's share and the little fellows none at all. In each partition between the stables in his hog house there were doors that rose upwards so that the hog could be easily transferred from one to the other. He showed the desirability of having easy access to the stalls. They should never have to climb over a partition to get into the hog pen. The man who had to do that was not very apt to clean the pen out. He remarked that men cleaned out the stables of their cows and horses twice every day, but their hog pens were rarely touched. The manure was often allowed to accumulate, and some people held the opinion that it was healthy for a hog to live under such conditions. This he emphatically denied. The

yards in front of his hog house were the same width as the stalls, and twenty feet long. There was a window over each stall. When he was building his hog house people had laughed at him for putting in windows. It seemed in the eyes of some people that whatever you did for your hogs you were doing too much, and whenever you said you were going to favor your hogs you fell just so much in the eyes of your neighbor. There seemed to be the old Mosaic law hanging still around the hog—"Thou shalt not eat thereof"—and yet we little knew what profit it was to us. His hog house was twelve feet high in front, and right above it was a chamber for the storing of hay and straw. There was a ventilator over each pen through which they could drop the bedding into the stables. A pig when breeding should have fresh bedding every morning, and when a man had to go to a straw pile to get it the pig often had to do without this desirable comfort. He had a pair of scales on the floor at the further end of the alley, with a fence around. A pair of scales and a pencil was a better educator to the feeder than he (the speaker) would be if he were to talk to them all day. When he gave a pair of scales and a pencil to his son upon the farm he became an intelligent feeder. Every feeder of swine should know how many pounds of live weight he was making out of a given quantity of feed. When they let the hogs step onto the scales once every twenty-four hours they knew precisely what they were doing. You may say to me that you have plenty of by-product, and that you hardly know how to get away with your by-product. Have you ever thought that a hundred pound pig, or a pig weighing between 70 and 100 pounds, cannot, during twenty-four hours, eat and assimilate and give you the best returns on more than twelve pounds of milk? And yet you are, in all probability, feeding sixteen pounds of milk a day to every one of your pigs when you could have made on the same feed the same amount of live weight gain on two hogs as you have done on one. The dairymen often make a mistake by feeding their milk without grain. They say, "I have the milk, I am bound to feed it, and my hogs must get away with it." Have you ever thought that you have simply the one kind of food—a nitrogenous food? If you add to each 100 pounds of milk thirty pounds of corn meal or of barley meal, or barley and rye mixed, you will find that you are making two pounds of live weight where you made one before on your skim milk alone. You will find that you can raise two hogs in the place of one. The competition in the breeding and feeding of swine is becoming greater and greater every year, and it is only by economical feeding that we can possibly hold our own. It is customary upon some dairy farms, where there are not enough pigs to consume all the by-product, to store the milk in barrels. I cannot think of anything—although I am a German and they say all Germans like sauer kraut, and I do—I cannot think of anything more detrimental in the feeding question and to the lives of our hogs than the storing of milk in barrels. Think of the swill barrel that stands at the back door in which are put the washings of the creamery, and the milk, and the house offal, until everything becomes mixed up in the barrel, so that when the man comes to feed his hogs he holds his nose with one hand and the pail with the other. And then that man complains that his hogs are not doing well! He forgets that when milk becomes acidulated in a barrel it is losing the four per cent. of sugar that the skim milk contains. It has turned into alcohol or vinegar. I do not know why some men persist in constantly feeding the sour stuff, and aiming to get it sour for their hogs. There seems to be an opinion that it is necessary to have the food sour in order to get the hogs to eat it. Let us judge the hogs by ourselves. We want a pickle sometimes, but we could not take them all the time without anything else. I believe that under a system of high feeding, when we are fattening the animal in its last stages, that it may be a good thing to give it a slightly acid food, but when food has turned to vinegar or alcohol we certainly should not feed it any more.

Now, as to the feeding of brood sows. How are they fed? Is there any consideration on the general farm in feeding brood sows? Are they not fed precisely like the rest of the hogs? You are probably not corn feeders like we are in our section, but possibly you feed barley and rye. I do not know what feed material you are using, but how many men are there that ever take into consideration that the pregnant sow should receive this consideration in feeding: that she should be fed on the feed that is of use to the digestion? Instead of this there are men who simply feed the brood sow at the same

time as the others, and get them into a fatty condition like the ordinary hogs, and then complain of the failure of their sows to breed. It is hard to imagine all the mistakes that are made in the feeding of our swine. If four pounds and a half of feed will give us one pound of live weight to a 100 pound pig, fed on three rations a day, there are men who are simply feeding to sustain life. The pig should grow from the time it is born until it goes to the block, and every moment the pig stands still—I care not if it is a pig that the dairyman keeps simply for the consumption of his by-product, or if it is the hog the farmer keeps for profit—it is money out of pocket to the owner. During the winter the hog requires nearly two pounds and a half of feed in order to sustain life, and we have to add the other two pounds in order to make one pound of live weight again. It must also be remembered that you have to feed against temperature, and it is here that the advantages of a good house come in. I find from conversation that you have small yards, that you feed your hogs in pens, and have simply a small yard for them. Gentlemen, I have found that exercise means money. I have found that when feeding high it is an advantage to give hogs plenty of room; they do better Under the highest system of feeding, and especially you dairymen that are feeding so much sour stuff, you will often find that the hogs are everlastingly rooting and throwing up your yards regardless of everything. You will probably attribute it to the breed. It is nothing of the sort. Under high feeding the hog must be stimulated in its digestion. He roots not out of mischief but for those things he finds in the soil that will aid him in digestion, and that will take the sour elements out of his system. Have you ever thought that you are dealing with an animal with the smallest stomach with the exception of a horse? Have you ever thought that digestion in the hog goes onwards into the intestines and assimilation at the same time? Have you ever thought that when you put more food into the animal than he can eat clean at one time, that you are simply feeding to a disadvantage? A hog, under a high system of feeding, should have a condiment. It is my practice to give my hogs charcoal. I presume I am in a timber country where you have lots of charcoal. It is not so with us. We have got to pay high prices for our charcoal, and therefore we take our corn cobs and burn them into charcoal. I do it in this way. I dig a hole in the ground four feet deep, a foot in diameter at the bottom, and about four feet at the top. I set a fire in this and by degrees add the corn cobs, first about a bushel and then three or four bushels more. When one side of the cobs have been burned I turn them over, and I continue to add until the hole is full of glowing cobs Then I shut it up with earth, and in the morning I can take out ten or twelve bushels of charcoal. This charcoal is just the thing to aid the pig's digestion Take six bushels of charcoal and break it up into the size of a hazel nut (it won't matter if half of it is dust), and add to this six pounds of salt and a bushel of wheat shorts. Put it on the floor and mix it well with a shovel. Then dissolve a pound and a quarter of copperas in a large pail of water, and by means of a sprinkler sprinkle it over the charcoal mixture. Then mix thoroughly and put in a box. Stand this in your yard and fix securely with stakes. You will be astonished what an amount of this mixture the pigs will consume, and you will also be surprised to find how it will assist their assimilation and digestion. If I should take the floor again you would do me a great favor if you would ask me questions in any direction in which you may wish information, or where you may think I am in error. I have had an experience of feeding swine extending over nearly thirty years, and by your questions I shall be enabled to add to the instructiveness of my lecture.

The meeting then adjourned until the afternoon.

SECOND DAY—AFTERNOON SESSION.

When the Association re-assembled in the afternoon, JAMES A. GRAY, of Atwood, read the following paper:

CARE OF MILK FOR CHEESE-MAKING AND CARE OF SAMPLES FOR BABCOCK TEST.

This a subject that is of great importance in connection with cheese-making, and one that the producers of milk for cheese factories should be interested in. If cheese-makers do not get milk in good order it is a very difficult matter for them to produce an A1 article.

Bad flavored milk is far-reaching in its effects, for if a cheese-maker is skilful enough to handle such milk, and make it into cheese that will pass the inspection of the buyer before it is shipped, before that cheese comes into consumption the bad flavor will no doubt have developed, and then the reputation of the factory is injured thereby.

The most important matter in connection with the care of milk is absolute cleanliness from beginning to end. Everything that milk comes in contact with should be clean. When the cows are milked in the stable, the milk should not be allowed to stand there any length of time. After the cows are milked the milk should at once be removed and strained, and then properly aerated by means of an aerator, or by dipping, stirring, or pouring so as to expose it to the air. I am of the opinion that the best way to aerate milk would be to pump air into it with some kind of a force pump. I have not seen this done, but I am informed that it is done to a large extent in the United States. Of course if this were done the air would require to be pure. Perhaps there are some in the audience who have been in the habit of doing this, or have seen it done. If so, I hope they will speak out and inform us what the results have been.

If milk has been properly aired and stirred it is not necessary to put the can in cold water over night, but it should be placed in a position so that the air can get around it. Where milk is kept from Saturday night till Monday morning I think it is necessary to put it in cold water, but it should never be put in the water until the milk is thoroughly aerated. Some of our best patrons have told me that they found it impossible to keep it during the hot weather without doing this. I know some will not agree with me on this point. Now, the morning's milk should be aerated and stirred as well as the night's, for I am of the opinion that a great many of our tainted and gassy curds come from the morning's milk. People, as a rule, just strain it into the can, put on the cover, and take it to the milk-stand. When a patron is sending two or more cans to the factory he should not mix the night's and morning's milk together. They should be put in separate cans and the cover left off the morning's milk until the milk hauler comes along, so as to allow the animal heat to pass away as much as possible. I would far rather have five or six cans of changed milk (I do not mean thick milk) than one can of tainted milk.

It should be the aim of every milk producer to send his milk to the factory in the very best possible condition. While there are a great many farmers who take a pride in doing this, still there are others who persist in allowing their cows to drink dirty stagnant water during the hot months of summer, and in the fall stuff their cows with turnips and turnip-tops, and expect their cheese-makers to make a first-class article which will bring the top price on the market, while I admit that turnip flavor can be taken off so that the buyer may not be able to detect it when the cheese are shipped; yet I have my doubts that the turnip flavor will develop afterwards, and if so it will have a bad effect on our fall cheese. If farmers were more particular in salting their cows they would find that during the hot months of summer they would have less trouble in keeping their milk in good condition.

Another defect in the care of milk is the returning of whey in cans. If the whey is not emptied when the cans are returned, and the cans thoroughly washed and scalded, it is almost impossible to have fine flavored milk.

With regard to care of samples for the Babcock test, I would say that this is also a subject of vital importance, for if a cheese-maker is careless about this matter it is impossible for everything to come out all right. The jars to receive the samples should be placed on a shelf or table convenient to the weigh-can, each route by itself, and each properly labelled. The bichromate of potash should then be put in the jars before any milk is put in. When the testing is done once in two weeks, about one-quarter of a teaspoonful of bichromate of potash is required to keep the milk in a liquid state, and when tested once a month one-half a teaspoonful is required. There are several methods of taking samples. Ours has always been done in the following manner :

After the milk has been poured into the weighing-can, and thoroughly stirred, a sample of milk is taken out with a one ounce dipper and put into its respective jar. This sample is taken out every morning. The jars are well shaken every morning when a fresh sample is put in so that the cream will not adhere to the sides of the jars. Before proceeding to test the milk at the end of two weeks or a month, as the case may be, the jars with the milk should be placed in a tub of warm water, so as to raise the temperature of the milk to eighty or ninety degrees. By doing this any cream that may be sticking to the inside of the jars will be removed, and you will be enabled to get a more correct sample. The milk should then be thoroughly shaken, and then poured into another jar, then back into the one it formerly was in, and then the sample should be taken with the pipette and placed in the test bottle.

The milk should never be emptied out of the jars until the test is made, for quite often a bottle is broken during a test, or some other accident may occur, and if the milk is emptied there is no way of getting another sample, and then justice cannot be done to that patron. Where the system is adopted of paying by the per cent of fat, it is of the utmost importance that great care should be taken not only with the samples but also with the testing. No person should be allowed to do the testing who does not thoroughly understand it. I am not at all surprised that some factories which tried the new system for one year went back again to the old system. I know of one factory that did this, and the reasons for going back to the old system were the carelessness of the cheese-maker in taking the samples, and allowing his inexperienced helpers to do the testing.

FRATERNAL GREETINGS.

The PRESIDENT then read a resolution passed by the Directors of the Association after the adjournment. It was as follows : "That the following telegram be sent to the President of the Eastern Dairymen's Association in convention assembled : 'The Dairymen of Western Ontario send greetings and wish your convention as great success as their own.'" The resolution was adopted amid applause.

The PRESIDENT : As this is a makers' meeting I would like to introduce an innovation. The Vice-President of this Association is a successful maker and knows all about cheese-making and what makers ought to be, and I would like to ask him during the next couple of hours to preside at this meeting. I have now great pleasure in asking Vice-President McLaren to preside.

Mr. MCLAREN was loudly applauded on taking the chair. He immediately called upon Mr. HARRY WHITE, of Belfast, to deal with the following subject :

GASSY MILK AND FLOATING CURDS.

As I was one of your committee appointed at our last convention to prepare a paper along the line of cheese-making for this meeting, I will speak for a short time on the handling of gassy milk and floating curds. In the first place I will just say that I know of no better way of handling gassy milk or tainted milk than to return it to the arm from whence it came or let it run to the whey tank.

I think that most of the cheese-makers will agree with me that we do sometimes get milk in which we do not detect any bad flavor when delivered to the weigh can, and often not until heated to about the proper temperature for setting. This is the time, I believe, the maker should be very careful, and examine the milk to ascertain its condition before setting, and should he detect any taint or gassy flavor he should have such milk ripened quite a good deal more. If I were setting milk with a clean flavor to come in eighteen seconds with the rennet test, I would prefer milk with a bad flavor to be ripened down to twelve seconds. I would recommend using one ounce more of rennet for this kind of milk. My reason for so doing is that I think I retain more moisture, which is a help to a floating curd. I would like the curd from gassy milk to be quite firm before cutting, and to be cut quite coarse and worked very slowly and carefully, and to be left as much as possible in the same form as when first cut and not to be heated above ninety-six degrees, and to have one full hour in cooking. My reason for not heating above ninety-six degrees is that I want to hold more moisture, and by so doing I am accomplishing that object. If it should turn out to be a floating curd I do not want the whey drawn off until I have three-eights inch acid with hot iron test. Then I dip in one end of sink. I do not stir a floating curd any at the time of dipping, but let it mat as soon as possible for milling. The Harris mill is my favourite mill, for which I have two sets of knives: one cutting five-eighths inch square, the other one-quarter by seven-eighths. This is the one I use for gassy and floating curds. Now, as soon as the curd is matted enough I put it through the mill. I have several reasons for so doing. One is, I want to get rid of some of the whey, which would have passed out at the time of dipping had I stirred it, and the second is, that I get a good many of the holes that are in the curd cut open and exposed to the air. After milling I do not stir any, but let it mat together again Then I break over in quite large pieces and turn at short intervals until I have one and one-half inch acid with the hot iron test. Then it should be milled a second time, when it should be kept apart until ripened down ready for salting. I would recommend the temperature of the curd to be kept up to ninety degrees until the curd begins to have that nice silk feeling. Then let the curd cool down as the time approaches for salting.

I like cheese from a floating curd to cure out slowly, and to do this I want the curd to go to press at about 70 degrees, and use half a pound less salt than I would on a curd with a clean flavor. By using less salt and going to press at a low temperature, cheese will cure out slowly, and when cured will cut up much nicer than if more salt was used, and had gone to press say at eighty degrees. Press all cheese forty-five minutes before bandaging. Use plenty of clean scalding water when bandaging. Use two sets of cap-cloths when pressing, and press all cheese twenty hours before taking to the curing room.

In conclusion my advice to makers is: Do not undertake to make cheese from tainted or gassy milk if you can avoid it. I think if makers would do more missionary work among their patrons, and ask for better quality of milk, and let some other fellow look after the quantity, they would have less gas and better cheese.

Mr. Blayney: What is the cause of gassy milk?

Mr. White: I cannot give you the causes, but I can give you some of the reasons. Cows out of condition; neglect after the milk is milked; cows drinking bad water; cows eating bad weeds, etc.

A Member: At what temperature would you have the water?

Mr. White: Along about ninety-four degrees, ninety-five degrees, ninety-six degrees. I do not think two or three degrees makes much difference, but I would not want to go over 100 degrees.

A Member: Do you think there is anything gained by turning the cheese in the press in the morning?

Mr. White: Yes. To prove this I took six cheese; I turned three of them in the morning and the other three I didn't. They were all treated alike up to going to press. When these cheese were seven weeks old I cut them through, and I found those that had been turned were a good deal better cheese.

A MEMBER: What condition should the milk be in to make a perfect cheese?

Mr. WHITE: I would want milk about twelve hours old, sweet and clean in flavor, and then I think, if the maker will use the right skill, he will have a perfect cheese.

A MEMBER: Why would you recommend less salt with a gassy curd?

Mr. WHITE: There is generally a dry curd and if you use as much salt you get a dry hard cheese, but using less salt you will get a cheese that will cut up better.

A MEMBER: How are you going to get your curd down to seventy degrees in the hot weather?

Mr. WHITE: Well, get it there if you can; if you cannot, then do the next best thing.

Mr. GRAY: I cannot see how Mr. White can get his curds down to seventy degrees in the hot weather. Of course I believe it is a good idea, but I can't see how he can get them down to that.

Mr. WHITE: My experience is that when I get floating curds it is in cool weather—almost frost, sometimes. That is the time when we get floating curds; but I have not had any for some time. In the really hot weather you do not get many floating curds, but you get fast workers.

A MEMBER: What temperature would you recommend the milk to be tested in?

Mr. GRAY: Supposing you had put your jars into water about eighty degrees or say one hundred degrees, it would hardly raise the milk in the jars to that temperature. I should think about seventy degrees or seventy-five degrees would be about the proper temperature at which to test the milk.

A MEMEBER: Would you recommend the acid to be of the same temperature as the milk?

Mr. GRAY: I just use the same temperature.

A MEMBER: I tried it at a test this fall. I warmed the milk to a temperature of sixty degrees, and I put in the acid cold, and I found it took more acid to make the test than when it was warmed to the even temperature of the milk.

Mr. GRAY: I have not tried it. I am glad that you have mentioned that. I hope the cheese-makers to-day will make good use of their time, and that anybody who has experiences like that will let us know.

Mr. PAYNE: That is precisely my experience with the acid. To have uniform results you want to have uniform temperatures.

Mr. TYNDALL: I would like to ask Mr. White why we have gassy curds on cold nights?

Mr. WHITE: It is simply this—the farmers think the milk is going to take care of itself those nights. (Applause.)

Mr. TYNDALL: That is what I have always thought myself, and I mentioned it in order that the farmers here would be reminded of it.

Mr. TYNDALL: Mr. Gray spoke of the whey going home in the cans to the patrons again. Can he not give any reason why it is that these factories turn out quite as good, and in a great many cases, better cheese, than those where the whey is fed at the factories? Some of the factories whose whey goes home in the cans are great prize winners.

Mr. GRAY: I must admit that there are factories standing high where the whey goes home in the cans, but in those cases the patrons empty out the whey from the cans just as soon as it gets home. I admit that good cheese can be made where the whey is returned in the cans if the cans are emptied shortly after they are taken home; but how often you find the cans left on the stand until some time in the evening. After standing for a long time they are washed out and then the milk is put into them. I cannot see how good milk can possibly be had under such conditions.

Mr. TYNDALL: Which do you think would do the most harm, letting the cans stand with a small quantity of milk in them or with whey in them?

Mr. GRAY: The whey by all means.

Mr. TYNDALL: In some cases I agree with you, but in others I do not. In some cases where the whey is not carried the cans get only a temporary washing out before the milk is put into them; whereas if the whey is left in, the acid eats out all the grease. Where the whey is returned in the cans the patron is more careful; he is afraid of that whey injuring the milk the next day, and he cleans it. On the other hand he does not suspect that a little drop of milk is going to do harm. As a rule it does more harm. The only way to make a good cheese at the factories where the whey is fed is to have the hog pen at least a mile from the factory, (laughter), and then you would have to make arrangements with the clerk of the weather never to let the wind blow towards the factory, because bad odors will go into the curd. There are some factories where they are careful to wash the cans before they leave the factory. That is all right, but if a little milk is allowed to go home in the cans it is going to do a great deal more injury than the whey going home in the cans. I also think the patrons should have what profit there is attached to the whey. There is no harm if they are careful.

Mr. PAYNE: I think a great deal of the difficulty would be obviated if our friend were just as much afraid of the whey as he is of the pigs, and consequently would get the milk away from the whey.

A MEMBER: I have made cheese under both circumstances, and the dirtiest cans that I have ever seen occurred where the whey was not taken back.

Mr. WHITE: Do I understand Mr. Tyndall to advocate returning the whey in the cans?

Mr. TYNDALL: In certain cases I do.

Inspector MILLAR was then asked by the chairman to say a few words on the subject. He said: This is a vexed question, but I must say that I am decidedly in favor of having the whey fed at the factories. I have been travelling amongst the factories for some years, and have had opportunities of judging between the two systems. I have found that in nine cases out of ten the cheese made in factories where the whey is fed is of a better flavor. This being the case, it shows clearly that the better plan would be to leave the whey at the factory. If I were a patron of a factory I would rather see the whey running down the creek than see it returned in the cans. I am satisfied that if we abolished this whey nuisance we would have more money for our cheese at the end of the year. The danger of returning the whey is this: While one hundred patrons may be very careful and see that their cans are kept clean, there may be one or two in the lot who are careless, and these two patrons will spoil the flavor of all the milk sent to the factory. I do not think there is a factory in the country that has not one or two careless patrons in it, and sometimes more, never less; and, this being the case, I think you will see clearly that it would pay well to have the whey left at the factories. With regard to the hog pens, I could refer you to a number of places where the hog pens are not ten rods from the factory, and yet it would be impossible for you to tell that a hog pen was about the place unless you saw it. If they are kept properly it is not necessary to have the hog pens at a distance.

Mr. RUDDICK: This whey question is a difficult one. It occupies more of the attention in this section than it does down in the east. I agree with several speakers who have just spoken on the point that the matter of cleanliness has a great deal to do with it. I would begin in this matter of cleanliness right at the factory, and see that the whey tanks are thoroughly clean. There is a great deal of fault to be found upon that point. Some of the whey tanks are never cleaned, and they should be. Down in Quebec they are a good deal ahead of you in matters of that kind. They are adopting the plan of tin-lined whey tanks, and they are thoroughly cleaned and scalded every day. They do not get dirty whey in that case. Whey is not dirty unless it is polluted, and thus they get over a good deal of trouble. I find that in some sections the patrons will

not listen to the idea of having the whey fed at the factories. Then let there be every possible attention paid to the whey tank It would pay the patrons of any factory to have the tank so made as to be thoroughly cleaned regularly, and you cannot have them too wide. Galvanized iron lining would be no good, because it would be eaten off very quickly by the acid in the whey. There is another point The very sour whey has the effect of taking the tinning off cans quickly. Cans in which sour whey is allowed to stand will not last as long as cans that are emptied out as soon as the whey is returned, and if the tin is worn off the can it is not a fit thing to carry milk in. If you will watch that sort of thing you will find that the flavor of the milk in cans of that kind is always bad.

A MEMBER: What sort of a whey tank would you prefer?

Mr. RUDDICK: Tin.

A MEMBER: How long would that last?

Mr. RUDDICK: For years.

A MEMBER: Have you ever known any to be built of concrete?

M. RUDDICK: No, I have not heard of them. That would necessarily be a tank in the ground.

A MEMBER: I have been thinking of putting in a concrete tank.

Mr. RUDDICK: I would be afraid that the acid in the whey would have the same effect on the cement as the acid in a silo has on the cement lining.

A MEMBER: I wrote to a dealer in cement asking his opinion about it. He said that the whey would not have any effect upon it at all. I am quite willing for him to put one in for me if he will guarantee that it would not.

Mr. RUDDICK. There is this objection, it would necessarily be in the ground. I think we should have all our whey tanks elevated; they are so much easier to clean.

Mr. BELL: I put in a cement bottom to my tank. It lasted two weeks; the whey seemed to eat a hole through it in no time.

A MEMBER: There are a good many buyers present; I would like to hear from some of them on this whey question.

Mr. BALLANTYNE: To my mind there is only one view of it. I have possibly had as much opportunity as most people to judge of the effects of the whey carried in the cans, and I do not think there can be two opinions about the evils of the system. I was surprised to hear the last speaker say that the farmers wanted it. Satisfy the farmers there is no benefit, and I will warrant that they will not want it. There is no benefit, and if they want to get the highest prices for their cheese they must discontinue it at all hazards. Do you pretend to tell me that by hauling back fifty or two hundred pounds of whey you can consume that whey more economically than if it were fed in the factory? I will defy you to find cheese factories as a rule where they do it, that the cheese have not these defects. Which are the factories that fetch the highest prices? Does Bluevale send back its whey? or Elma, or Strathallan, or Bright? And these are the cheese that will sell where others can't sell. I do not pretend to say that they get the premium they should get, and might get, because they are really paying for the inferior goods; but there are no two opinions about the evils of the whey system. It admits of no discussion, to my mind. Talking about the Old Country, they have nothing of the kind there. I cannot emphasize the disadvantages of this vicious system too strongly. Mr. Ruddick admits that cans with the tin worn off are not fit things to carry milk in. How long will it be before they are in that condition if they are used for carrying sour whey? I repeat what I have previously said, how many of you, if you were living, say in Woodstock, would take milk from a dealer for house purposes if you knew that that dealer used for carrying sour whey the cans from which he draws your milk? If cleanliness is important in connection with milk for domestic use it is equally as important for cheese-making. You must remember this—you can't realize it too soon—the public are getting more fastidious every day and every season. They will not take inferior goods of any

description. I remember the time—and it is not so long ago—when cheese was made and considered fine that would not be eaten to-day. We have other nations competing against us to-day that we had not then, and they are catching up to us—going ahead faster than we are. There are other articles of food—Australian butter and mutton, American beef, jams and marmalades—that are used now in the place of cheese to a certain extent. There is only one way in which you can retain your reputation in my opinion. You must do everything to improve the quality of your cheese, and the first thing to do is to do away with carrying back the whey. You may tell me that some of the factories where the whey is hauled sell as well as others. That is because the markets fluctuate—one sells to-day, another to-morrow. But do we find, as a rule, these factories selling as well? We do not. Dealers who want to fill an order will perhaps buy them, but not as a general thing. I know from my own experience and observation that you hardly ever get a cheese made at one of these factories that when it gets aged does not show defects. We have to make fine goods for another reason. The time was when Western Ontario cheese was quoted a cent and a half above Belleville and Brockville and those other districts. Is it that to day? There may be other reasons to account for the change, but our goods are not improving at the rate they were then. Now that difference comes out of the farmer. The cost of hauling the goods and manufacturing and all the other departments of the business is the same whether the cheese fetches a high price or a low price. Remember, this business will not continue to be profitable unless you improve the quality. The first thing is perfect milk. We now have a class of makers who cannot be beaten in the world, striving by every means to do their best. We now have better buildings and better machinery, and curing-rooms and working-rooms and press-rooms, such as we never had before. The buildings are not now barns, and the temperature can be kept even. I do hope that we will go on and do everything that we can to improve the quality, and the first thing to do is to get pure milk.

Mr. Houldsworth expressed the opinion that there was very little value in the whey as feed when it got back to the farmers the next day.

Mr. Butchert: I notice that the buyers buy the cheese and keep them in cold storage, and they accumulate there. It seems to me that has something to do with keeping the price down. I would like to ask Mr. Ballantyne whether, if he were a patron, he would approve of this method?

Mr. Ballantyne replied that it was purely a commercial question, and it was impossible to give an answer that would apply in all cases. He thought it helped to regulate the price. He would not attempt to say what would have become of the cheese trade last year if cold storage had not been resorted to. There was enough cheese in May last to supply the demand for months. It was a question whether the manufacture of summer cheese was not in excess of the consumption. They had to be kept somewhere or go at a low price. The market would have been more demoralised, the losses would have been greater. There would have been less temptation to speculate unless there had been cold storage in which to put these cheese. The losses in England last year were simply enormous, and the result had been that there was very little speculation on the part of the English importers. The speculators had been more on this side than formerly, and they had helped to steady the market, and he dared say, to improve the prices.

PRACTICAL CHEESE-MAKING.

Mr. A. T. Bell, of Tavistock, then read the following paper on "Practical Cheese-making":

In dealing with the subject of practical cheese making, it must not be expected that even the bulk of this paper will contain new material for cheese-makers Of necessity there must be a good deal of repetition, for the art of cheese-making with all modern improvements has been taught for years, and I cannot think of a satisfactory excuse,

any cheese-maker may have had for not acquiring that knowledge which is necessary in order to manufacture first-class cheese. However, cheese buyers and instructors tell me that, from what they are able to learn travelling around among the factories, there is just as much need as ever there was of preaching the gospel of cheese-making. Taking for granted that this is a fact I will try and make plain the chief points in practical cheese-making so that he who runs may read. We will commence when the milk has been received at the factory, although the ultimate result is to a great extent determined long before this stage is arrived at, for all cheese-makers will agree with me that the condition of cows, cleanliness in milking, care of utensils and proper care of milk, are simply indispensable in the production of milk required to make *first-class cheese*, for nine-tenths of all the trouble experienced is from the effect of milk not being properly cared for in some way or another. We want a revolution in this respect, and until we have it we can never hope to reach that goal of perfection which should be the ambition of every cheese-maker. When the milk is being received, it is well to start heating it when the vat is partially full, unless the cheese-maker is suspicious of any over ripe milk being delivered. In this case, postpone the heating until a rennet test has been made. Take the required amount of milk from the vat and heat it to 86°, and, to insure that this work is done properly, I would advise the purchase of two small tin pails at a cost of say twenty-five cents, one for holding cold water and the other hot, and if the milk is not at the proper temperature when taken from the vat, it can be raised or lowered, as the case may require, by placing the vessel containing the milk in the water without spending any unnecessary time, for there are times as all cheese makers know when a few minutes mean a great deal to them, and the working of the curd afterwards. Right here allow me to say, that I have always striven to impress upon cheese-makers the great importance of being master of the situation, as it were, and it is at this stage of the process, more especially, that we can accomplish it. It will not be necessary for me to describe the rennet test, as it is now generally well known, but I would say to cheese-makers in reference to it, never under any consideration neglect to use it, for I have always found it, when used intelligently, an infallible guide to determine the condition of the milk. If the milk is found by the rennet test to be over ripe it will be necessary to hasten the process by heating up faster, to keep ahead of fermentation, and if it is found to be working slowly or too sweet—so slowly that it will not be ready to set for say more than an hour after heating—I would advise using a starter, for we find a considerable loss in not being able to keep the cream down or stirred in sufficiently when the milk is long in ripening. Our method of preparing a starter, and which has proved very satisfactory, is as follows: We take of the best flavored milk which comes to the factory, say about one pail for each vat, heat it to from 86° to 90° degrees then add about one-half the quantity of pure water. (In case the water is not absolutely pure it will be necessary to boil and cool it). Stir well together, and set it away in a quiet place where it will not be disturbed until required for use. Practice will teach the cheese-maker when to add the water. Through the summer months, as a rule, we add it as soon as the milk is heated. In cold weather when the milk will be naturally sweeter, we let it remain an hour or so to ripen a little before adding. The questions may arise here, why add the water? and why not disturb the starter? To the first, I would say that by adding the water we obviate the difficulty of contending with tough, thick milk, which is very undesirable in a starter, for it is almost impossible to break ordinary thick milk fine enough to mix properly with the milk in the vat. White specks in curd and cheese have often been traced to this cause, as thick milk will not take color. Second, to disturb this starter at a certain time, is almost sure to cause a separation of the milk and water, and if this takes place the milk will be in almost the same condition as though the water had not been added. Never prepare a starter from milk which has been mixed in the vat, for, although you may have fairly good success by doing so, the risk is too great, and in nine cases out of ten you will miss it. Do not abuse the use of the starter for I know some cheese-makers seem to have the starter craze, using it far too much, which is a decidedly wrong practice, introducing so much acid into the milk, that it takes hours and hours to overcome this tendency to harshness in the curd caused by the excess acid introduced by the starter. They seem to have a mistaken idea as to its use. It should be considered

merely as a help. Some seem to have got the idea into their heads that by using plenty of starter and getting their milk to work fast, they will be able to get through early in the day. Now this is a mistake, unless you are content to make what we call acid cheese, which, those engaged in the trade will bear me out in saying, are not wanted.

We will consider now the question of ripening the milk, for we are convinced that on this point hang, as it were, our future destinies for the day at least. Milk should be ripened to that stage, so that, in from two and a half to three hours from the time the rennet is added to the milk there will be a certain amount of acid show on the curd by the hot iron test, say from one-eighth to one-quarter inch. Always set the vat in time to insure a thorough good cook on the curd before it is necessary to draw off all of the whey. The ripening of milk should never be carried too far, or to that stage that it will work too fast; if so there will be an unavoidable loss of fat in the whey. As I have said, heat the milk to 86°, because setting at a temperature much below, we are apt to have tender curd, curd that will require very careful handling in order to avoid waste. On the other hand by setting at a temperature much above, the curd is so hot that when cut it is apt to knit together, and requires more vigorous stirring, consequently more waste, fine particles of curd being broken off and lost in the whey. I do not think this question of waste in manipulating the curd receives that attention from cheese-makers on the whole that it should. It is something terrible to witness the cat-hauling curd does get sometimes by not a few cheese-makers.

Rennet, and applying it to the milk.—When it is desirable to make a quick curing cheese, such as we usually make in the early part of the season, use very freely of rennet or enough, so that the curd will be ready to cut in from fifteen to twenty minutes. On the other hand if slower curing cheese are wanted, use less rennet, say enough for perfect coagulation in from thirty to forty minutes. Before applying the rennet it should be diluted in say not less than one-half pail of cold water. I know it is the practice with some to use warm water or water about the same temperature as the milk, but I think this is a mistake. When diluted with cold water, it does not act so quickly on the milk, and gives more time for a thorough mixing. When adding the rennet start pouring it in at one end and have it all in by the time the other end of the vat is reached, following up with the dipper immediately; stir constantly for about five minutes. If the milk is not working too fast, and will allow it, go over the surface of the milk with the bottom of the dipper for several minutes to keep cream from rising, and if there is any draft or cold air coming on the milk, it will be found a great advantage to spread a cover over the vat until ready for the knife. There are different ways of knowing when the curd is ready to cut; probably the most convenient and reliable is to insert the finger and push it along under the surface, splitting it with the thumb as the finger is inserted; and if it breaks or splits clean without appearing milky or riley, it is ready to cut. Start cutting by using the horizontal knife. To insert it, lay it on end of vat near the handle and let it cut its way down into the curd, never force it straight down the end of the vat as I have heard of some doing. When the knife has assumed its proper position, move it along carefully to the other end, turning it around cutting back facing the other way, never attempting to shove it sideways through the curd. It will be well to note particularly the position of this knife. It must be held firmly and not allowed to get out of plumb, for you will readily see that the curd will be torn more or less if such be the case. The curd should not be subjected to any undue pressure other than from the thickness of the blade passing through it. When taking the knife out, allow it to cut its way out in the reverse order to which it went in. Now take the perpendicular knife, cutting crosswise of the vat, and then lengthwise, which will leave the curd in small square cubes. This will be sufficient cutting, unless in the case of fast-working curd when it becomes necessary to cut finer. Before we leave the cutting, I would strongly advise all cheese-makers to look sharply after the condition of their knives. See that they are sharp and no lumps of solder are around the blades, for any blunt surface coming in contact with the curd will certainly cause a waste, for every time the curd is cut or broken there is a loss of fat globules escaping into the whey.

Heating or cooking the curd. Start by stirring very carefully. Try to keep the curd as near as possible the same shape in which the knife has left it. I consider this a very critical stage in the process, and the greatest care should be exercised to avoid loss and keep the curd from getting ragged, for I have found again and again a loss of fat later in the process produced by not having proper attention bestowed on the curd at this particular time. After stirring say for five minutes, heat may be applied very slowly at first. If heated too quickly, it will cook the cubes on the outside, while they will be full of whey inside. If the cooking is done gradually the cubes will be cooked more uniformly and better results will follow. I have found that by taking a full half hour from the time the heat is applied until it is shut off does very well for ordinary working curd. Some authorities advise heating much more slowly, or one degree every five minutes. I think this slower than there is any occasion for. Setting at 86° and cooking to 98° means 12° or sixty minutes, or one hour, and that is quite a long time to have steam going on a vat. I would advise heating the curd to a temperature of 98° as a rule. While we find good cheese can be made heating all the way from 90° to 100° or over, I consider 98° the proper temperature. Always strive to have the whey clear and as free as possible from small particles of curd floating in it. Keep the curd stirred constantly while the heat is going on, and for some time after it is turned off to prevent the curd from matting; also to insure a more uniform cooking, for whatever theories may be advanced, we must have the curd fairly well cooked to make fancy cheddars. Those of us who have made cheese before the rennet test came into use will remember that occasionally a vat of curd would be too well cooked; on account of not having the milk in the proper condition at setting it would remain in the whey too long before the acid would develop, and as a consequence too much moisture would be expelled. The result was a dry stiff cheese, but there is no necessity for an occurrence of that kind again, for the intelligent use of the rennet test will enable any cheese maker, with normal milk, to have the curd just long enough in the whey to insure a proper cooking with the required amount of moisture and acid properly balanced. I would urge upon all cheese-makers, the necessity of using correct thermometers, it has been my lot to be sent to factories at times where they were having trouble with their cheese, and almost invariably I would find the thermometer wrong, sometimes as much as four degrees. While I do not say that this has been the cause of all the trouble, it has helped very materially in some cases.

Drawing the whey. This is a very important stage in the process. I always recommend drawing off part of the whey soon after the heating is completed. In the early part of the season we find it quite necessary to do so, so that we may not be caught by a too rapid development of acid. Through the summer months, when factories are liable to have tainted milk, by drawing the whey down to within a few inches of the curd and keeping it well stirred the flavor will improve very much. In the fall months it is still a good plan to practice, unless the factory is very cold, for when the curd takes on the proper amount of acid the balance of the whey can quickly be got rid of, which means a good deal sometimes. In fact all through the season the very great importance of having just the required amount of acid on the curd at dipping should be the special aim of every cheese-maker.

Dipping the curd, or, properly speaking, drawing off all the whey, should be done when the curd shows from one-eighth to one quarter inch of acid by the hot iron test. I would recommend the use of the curd sink, where there is room in factories for them, but in cases where there is no room, to use racks in the vats, which are much to be preferred to the plan practised by some of just packing the curd on the bottom of the vat.

Stirring or draining the curd. It is a little difficult to say just how much to stir curds at dipping, for the moisture leaves some much more readily than others, and just here the skill and good judgment of the practical cheese-maker will be called into requisition, for no one or two rules can be safely applied at certain stages of the process; the knowledge must be gained by experience and close observation. However, I would say, that the practice of stirring *very much* at this stage is objectionable. I have found a great waste in stirring a moist curd too much when dipped. It is better to let it stand

for a little and break it over carefully afterwards. When the curd has been sufficiently drained, spread it evenly on the racks about from four to six inches deep, and allow it to mat, and when sufficiently matted, cut or break into convenient pieces for handling, which may be determined largly by the curd mill in use as to feeding it conveniently. If the mill used be one that tears, or injures the texture of the curd, causing loss of fat, break the curd into small pieces, and the result will be less waste, for this matter of waste should be kept in view at every stage of the process. Keep turning and reversing the curd at intervals, to expel more thoroughly any surplus whey; turn it more frequently at first. It may be piled two and even three deep to advantage, if it has been drained properly, which will be shown by the amount of whey collecting around the blocks. Never allow any whey to remain on or around the blocks of curd. As soon as whey is noticed turn and reverse position of curd allowing the whey to escape. The temperature should be kept up if possible at this stage, to 94° or over, to facilitate the ripening of the curd.

Milling the curd. Generally speaking I advise the milling of the curd about half the length of time from dipping to salting. The acid at this stage should have developed to about one and a quarter inches. However, this may have to be varied considerably, as in the case of a moist curd, or one that is developing acid very quickly, it will be necessary to grind early which will greatly facilitate the expulsion of the whey, and give the cheese-maker better control of the curd. On the other hand, if a curd is ripening slowly by being too cold, and not enough of acid developed, defer the grinding for a little or until the curd becomes somewhat flaky. It would be presumption on my part to say what make of mill to use, for we have several good mills made in Canada at the present time, and each one has its advocates, who claim superiority for their favorite mill. However, I would say use a knife mill, and one that cuts the cleanest and most evenly, with the least friction on the curd. After milling, just stir curds sufficiently to keep from matting, and never mill the second time unless in the case of a very bad gassy curd, which by cutting it up finer will hasten the process somewhat. When it becomes necessary to mill the second time, do it immediately after the first milling, for if the curd be allowed to ripen before grinding the second time a great loss of fat will be the result. As the process goes on, from milling to salting, allow the curd to cool gradually, so that when it is ready to salt, the temperature may not be too high, say about eighty-six degrees to eighty-eight degrees. The condition of the curd when ready to salt is determined principally by the feel. When pressed in the hand, it should feel mellow and silky and present a glossy appearance to the eye, and the hand should feel distinctly greasy when the curd is dropped from it. Do not make the mistake that I have known some to make of salting the curd as soon as grease would show by pressing in the hand. It will very often show soon after grinding, especially if the curd has not been handled right in the former part of the process I would say as a rule let one hour at least intervene between milling and salting.

Salting the curd. This should be done with great care. First be sure that you have a recognized pure quality of salt, have the curd as near as possible of even depth over the sink, and see to it that the required amount for the vat has been carefully weighed out, which will vary according to the condition of curd and season. See that all lumps and specks, if any, are taken out, for cases have come under my observation quite frequently where the salting has not received that attention which it deserves, considering its importance it is done quite often in a slip shod way. Spread the salt on about one-half evenly over the curd; then rub it well in on the surface; then mix thoroughly; spread curd evenly again and apply the balance, rubbing in and mixing thoroughly as before. Stir it over again in about five minutes and again before starting to hoop. In from fifteen to twenty minutes the salt will be mostly dissolved, and the curd will be ready to hoop, having lost that harsh feel which was quite noticable just after salting.

Hooping the curd. I would advise every cheese-maker to provide himself or herself with a convenient pair of scales for weighing the curd, and weigh it all carefully into the hoops, putting the same weight in each, thereby insuring a more uniform lot of cheese in size and weight; for what looks more unsightly than to see a lot of cheese together on

the shelf of all sizes? Use a seamless bandage one-half inch less than the diameter of hoops. This will hold the cheese in better shape, and prevent any bulging out on the sides. It is advisable, as soon as curd is hooped, to put the press cloth and follower on, thus preventing the possibility of the rind becoming too dry by exposure to the atmosphere. The temperature of curd when put to press should be from eighty to eighty-five degrees. If put to press too warm, we are apt to have huffy cheese, also large slick round holes. On the other hand, if too cold the curd will not unite as readily, and more difficulty is found in getting a good close rind. It also necessitates heavier pressure.

Pressing the cheese. This is another very important stage in the process, and I would say be careful. Apply the pressure very slowly at first—merely start the whey. If applied too strong a lot of fat will be pressed out with the whey, while if the pressing is done carefully that will be retained to a great extent. A good rule is to observe the whey closely as it comes from the curd, and when it begins to run somewhat clear, the pressure may be safely applied, which should be done at intervals until complete.

Dressing the cheese. In about one hour they will be sufficiently pressed for this. Take off the hoops and draw the bandage tightly up, and see that it laps over evenly at both ends three-quarter inches. Have nice clean cap cloths on hand, and use one for each end. Spread them on smoothly, so that no wrinkles will be seen, and before putting back to press examine the sides of the cheese, and if they show a defective rind or any grease noticable on the bandage, wash and soak them well with good clean hot water, which will help very materially in closing and making a good rind. The water used in dressing the cheese should always be clean and hot. I am satisfied, if this were looked after more carefully, we would not hear so much fault found with defective rinds and cracks under the bandage. How is it that we find, more especially in the fall of the year, some cheese from the same vat with good rind while others are badly cracked? Largly on account of want of thought on the part of the cheese-maker, the latter part of the curd having been hooped at a lower temperature than the first, and requiring different treatment at the time of dressing, by making more use of the hot water. Besides using a cap cloth on each end, I would advise the use of press cloths as well. When put back to press see that they are straight and even under pressure, and apply good, heavy pressure especially when left for the night. The first work in the morning at the factory should be to press the cheese, taking up the slack. Then in about one hour remove the hoops and examine them carefully for defects, the most noticeable and common of which are shoulders or edges of cheese sticking up caused by defective followers, which will have to be pared off, and the bandage neatly replaced, and quite often the rind will have to be treated to another dose of hot water to soften it well before it will be perfect; for a perfect rind on cheese is a thing of beauty, and, I may add, a joy as long as we behold it. After having attended to all these points, which are indispensable to the production of gilt edge cheese, put them back to press, reversing the ends, thereby giving them more of an even and stylish shape, and be sure they are pressed evenly and straight before leaving them, so that there will be no putting back to press again when the time comes to remove them to the curing room, as certainly should be done if not straight and perfect.

THE HANDLING OF OVER-RIPE MILK.

Mr. Robert Johnston, of Bright, came next with the following paper: I will not say that the method that I pursue in handling over-ripe milk is the best or the only successful way of handling it. What I will to say is that it has given me the best results. I do not approve of accepting milk that is turned or has developed too much acid. But we get caught sometimes. It is then that we want to know the best method of making a marketable cheese out of milk which if handled in the ordinary way would make an inferior cheese. Heating my milk to eighty-six degrees, I test it with the rennet test to ascertain how fast I will have to move to keep ahead. As a rule I color a fast vat one-

eighth ounce more than one working in the ordinary way. I use the usual amount of rennet. I find that to increase the rennet does not allow time to thoroughly incorporate the rennet with the milk before coagulation sets in.

I commence cutting as soon as fit, and cut continuously until I have cut five or six times. I start to heat as soon as I stir curd from the bottom of vat. Heat in no less than twenty minutes. Start to remove the whey as soon as heated. Test curd by the hot iron test. If it shows $\frac{1}{2}$ to $\frac{3}{4}$ inch of acid in fifty minutes from the time the rennet was added do not handle it in the ordinary way. Stir it two or three times after dipping, and then salt it about one pound to the thousand of milk. Stir the curd dry, and you can let it mat. Cut and turn in the ordinary way, for you have control of your curd and can handle it a an ordinary curd.

Now the advantages I find in the adding of the one pound of salt are: it checks the acid and expels the moisture, gives you control over your curd, preserves the color and texture, and makes a good marketable cheese out of milk which, if handled in the ordinary way, would have made an inferior cheese.

Mr. PAGET: In regard to the dipping, would you advise that in all and every locality? In our locality we do not seem to be able to get sufficient body after we dip it, with the acid you have spoken of—$\frac{1}{8}$ to $\frac{1}{4}$ inch.

Mr. BELL: Some cheese-makers would say that $\frac{1}{8}$ was $\frac{1}{4}$. There is a great deal in the way in which they put it on the iron. I always think $\frac{1}{4}$ inch sufficient. I have never found any difficulty in getting plenty of body to my cheese with $\frac{1}{4}$ inch of acid. I happened to be in New York last summer for a few days and I found that curds out there would stand more acid than ours—that is at dipping—without being injurious There I only gave $\frac{1}{4}$ inch to the cheese I made, while I found it all right with plenty of body, but there are sections where the curd will stand more acid than $\frac{1}{4}$ inch.

A MEMBER: I have talked to cheese makers who have come from the west, and they tell me the acid which would answer in this section would not give the same body down there.

A MEMBER: I have made cheese in Oxford County, as well as in other parts of Canada, and I have found that $\frac{1}{4}$ inch of acid when dipping cheese is sufficient to give a good body in all the places that I have been.

Mr. EAGLE: Did you not say that some makers would call it $\frac{1}{4}$ inch, others would call it $\frac{1}{2}$ inch.

Mr. BELL: Yes; it is the way it is placed on the iron.

Mr. JAMES: Your opinion is that the same amount of acid with the hot iron will do in every locality.

Mr. BELL: Yes.

Mr. JAMES: That is my experience too. My belief is that they don't do the right thing with the iron.

Mr. BELL: It all depends upon the milk you have got. With gassy curds a little more acid is required; $\frac{1}{8}$ is quite sufficient in a great many localities. I think we get the better flavored cheese the less acid we use at dipping.

A MEMBER: In the cold weather if your factory is cold would you not advise a little more acid?

Mr. BELL: Yes, perhaps so; but I would advise some other means of heating your factory. Burn a little more wood and you will improve the quality of the cheese. It is a dangerous practice this of giving too much acid.

Mr. MCLAREN: With regard to curing cheese in the spring and the fall, I find much difficulty, and I would like some information.

Mr. BELL: In the spring time we keep an even temperature of seventy degrees, and if that is maintained we get our cheese ready in about two weeks or ten days. In the fall I find an even temperature of sixty degrees the best. Very often the curing rooms are

allowed to cool down during the night, and perhaps in the morning they are down to fifty, and it takes half a day to get the cheese into the same condition as it was the night before. If an even temperature of sixty degrees can be kept up in the fall it is preferable to a higher temperature. A temperature of from sixty to sixty-five is plenty.

Mr. JOHNSTON: In the majority of the factories of this country is it not almost impossible to keep an even temperature?

Mr. BELL: Yes.

Mr. BLAYNEY: Why do the cheese men receive milk that is not first-class, and continue to blame the patrons for sending it? I would like to know that. We find the grocers accepting bad butter; they seem to be afraid to refuse bad butter. And so it is with the cheese makers. As long as they continue to receive bad milk, so long will they get bad milk.

MR. BELL: I do not think that as a rule cheese-makers will receive bad milk. It sometimes slips in, but I think they are only too glad to return bad milk when they detect it. When the milk is very cold coming to the factory it is pretty hard to detect all the defects. The milk saved over Sunday is generally cold.

Mr. WHITE: Have you had any trouble at certain seasons with your curd losing a good deal of butter?

Mr. BELL: Yes, I have had trouble in that way. I think the chief cause of that is the milk getting abnormal. There is an excessive amount of fat along in August, and if the milk and curd are not handled very carefully you will lose that fat.

Mr. WHITE: I have noticed it generally in August.

Mr. BELL: Well, the milk is generally in an abnormal condition.

Mr. WHITE: How much salt would you use on a fast-working curd, say in August? Would you use more or less?

Mr. JOHNSTON: I would use the usual quantity.

MORE ABOUT THE HOG.

Mr. THEODORE LOUIS was again introduced to the audience, this time by Prof. Robertson, who referred to him as "my old master," and spoke very kindly of him. Mr. LOUIS came forward, and after remarking that he felt flattered at the words which had fallen from the lips of Prof. Robertson, continued his address on the hog. He said: My friend Mr. Robertson gave me a ride this afternoon through three or four miles of your country. It is the first time that I have seen Canada in daylight. I have been delighted with the substantiality of your buildings, and your barns, and I think when I took this morning the subject of hog houses and shelters that I probably made a mistake. From what I have seen this afternoon I imagine that you are well fixed so far as shelter for your hogs is concerned. I left my subject this morning on the question of condiment for feeding. Some of you who are feeding swine may not think it essential to have a condiment in the feeding system. I will give you an explanation You will generally find that when we are finishing off the hogs for the market, and especially when we are feeding them on one kind of food, that then they will root, and then comes in the necessity of a condiment. I had once forty hogs—shoats. I was finishing them off, and they were weighing two hundred and fifty pounds when eight months old. I was going to make a trial, because a great many men had said that it was simply my imagination that there should be a condiment before our hogs in order to give them better health, and aid them in digestion. Let us remember when the animal is ripening for the block the digestive organs are loaded with fat more or less, and that the pigs are losing their power of assimilation and digestion. There were forty-eight shoats at the time of my trial. I weighed out eight pounds of shorts, and I gave them a pailful of the charcoal

that I told you about this morning. I always find that the nearer a hog ripens for the block the more eager he is to eat either sand or something of that sort. It is simply that there is a want of power for assimilation and digestion. I weighed out sixty pounds of sandstone each twenty-four hours, a pailful of charcoal and eight pounds of swill. These hogs were fed upon the feeding floor. We have one in our hog house, so that in fine fall and spring weather we feed everything on the floor. I think feeding on the ground is a wasteful process In the twenty-four hours these hogs used sixty pounds of sandstone, and a pailful of charcoal, but they did not consume in that time eight pounds of swill. The swill would last from forty-eight to sixty hours, so that I found that they did not really need that amount of swill. I simply make this statement to show the truth of the assertion that we must aid the animal under a system of high feeding.

A MEMBER: Do you boil the feed after you grind it?

Mr. LOUIS: We have made experiments in boiling feed. We use a steamer in our hog house. We gain nothing by boiling feed, but we gain considerable if we bring our water to a boiling heat, and then put the feed in and feed it in winter time at from eighty to ninety degrees. By this means we artificially supply animal heat. While the experiment stations say it does not pay to heat the feed, I say it does in this manner. But it never pays to put it in a barrel and boil it for several hours. Remember that one hundred pounds of shorts or one hundred pounds of cornmeal or any grain will make forty-two gallons of whiskey. When you go to work and boil your feed for any length of time you are simply evaporating your sugar from your grain and you are not a gainer. You are evaporating all the time substances out of your grain. The feeding of a brood sow while she is nursing the pigs is an art. But there are few men that realize this. The brood sow on my place has to take the place of the cow on the farms of you dairymen. A brood sow will give as much milk during twenty-four hours as an average cow. Now, do not ask me if I have ever milked one. (Laughter). I want everyone of those within my hearing to have a pair of scales handy when they are feeding their pigs. A pair of scales now-a-days can be bought for twelve dollars. A pair of scales and a lead pencil is a better educator than I would be if I were to talk here for a day. When the litter of pigs is born take them ten hours or four or five hours after they are born, and put them on the scales, and you will find that they weigh from twelve, fifteen to eighteen pounds according to the size of the litter and the age of the sow. You weigh these pigs every twenty-four hours, and you will find that they have made a gain of from two to five pounds according to the ability of the sow to give milk. So you see, gentlemen, I am looking for a milker, just precisely the same as you dairymen are. I want to say, especially to the young men, that when you are making a selection of an animal you should get a milk-giver, for it is with the sow that the young pig gets his first start in life. When we are feeding a sow we should feed her with an eye to milk production, just as you are feeding the cow for milk production. It would be a great mistake to feed your sow on ground meal or corn alone. She must have them mixed. There is where the mistake comes in. The change of feed will always be a question in the art of feeding. One kind of feed will never give us the same satisfaction as when we are gradually changing it. My pigs nurse three months or ten weeks. They must wean themselves. You probably in your dairy business wish to wean them earlier. I do not believe in feeding the pigs separately in the trough. I adhere to the principle that the pigs should learn to eat with the dam. When they become accustomed to a course of feeding along with the dam's milk you will never have that back-set that you otherwise would have when you take them away from the mother. We should always endeavor to have our sows brood as near as possible together. Then we have the young pigs altogether. One of the great things is to have hogs all of a size and age. When we can put them on the market all of a size and age a buyer will never refuse a few extra cents.

A MEMBER: How would you prepare the feed for a sow that was nursing the pigs?

Mr. LOUIS: My favorite feed for a sow that is nursing pigs is shorts mixed. If the sow is a sow that weighs from three hundred to four hundred according to her size and age as a matter of course we must then ever feed to supply as many pounds. I

prepare two parts of shorts and one part of cornmeal. I steam this feed in the same manner as I said before. I feed it warm. I find that in the month of April and especially in the earlier months of the year, when the temperature is low, when I feed the sow warm feed of from eighty degrees temperature, that she will keep healthier. In this wise I change the sow's feed, If I have mixed barley meal and corn meal with the shorts I always add a little oil meal to that ration. Even with oil meal at twenty-two dollars you will find that it pays you to add it to the cornmeal. Nothing could be worse than to have your sow grow constipated, because it would cause constipation in your pigs. I never would add milk to any steamed or boiled feed until I feed it.

Mr. MALCOLM: You believe in feeding your pigs with the dam?

Mr. LOUIS: Yes. Another thing: when I want to teach my pigs to eat with the sow, I go through the alley in the morning and I take a handful of oats and I throw some into each stall. A pig is naturally very inquisitive, and when they hear the oats drop on the floor they will pick them up, crack them, turn up one ear and look very wise, and that is the first lesson the little pigs get to eat with the dam.

A MEMBER: What is the floor?

Mr. LOUIS: My floor is a wooden one. That brings something into my mind. Feeding of soil must go hand-in hand with feeding of live stock. I live upon a very sandy place, so sandy that it sometimes drifts, and yet you would be astonished at the wealth that I produce there. I calculate that while I feed my hogs I must be feeding my lands, and I save the manure for that purpose.

A MEMBER: Do you ever use concrete for floors?

Mr. LOUIS: I would not want a concrete floor in my hog house for breeding purposes. A concrete floor would be too cold at the time of farrowing, and your pigs would become chilled, and you would be very apt to lose them. Therefore I would rather have a wooden floor.

A MEMBER: How far above the ground would you put the floor?

Mr. LOUIS: About a foot from the ground.

A MEMBER: What direction do you prefer the drainage of the pen to take?

Mr. LOUIS: My floors are level. I would not want any drainage in my hog house. It is said that the hog is the dirtiest animal there is upon the farm. I say it is cleanest animal that ever was upon the farm, and I except no animal.

A MEMBER: Is your yard paved?

Mr. LOUIS: My yard is not paved, but it would be a good idea if you could pave the yards with blocks. We clean our stables just as regularly as we would cow stables. Prof. Henry says that I steal my wife's broom to sweep out my hog pen with. I know that a new broom sweeps awful clean. (Laughter). Along the fence we put out new bedding every morning. We find that the sow uses this for her droppings and every cussed little pig follows her example.

A MEMBER: Have you had any experience in the use of stone pens?

Mr. LOUIS: If I was going to build a stone pen I would build a double wall and and leave a space between, because if you do not, you will have a damp stable, and the great trouble would be that you will have more or less rheumatism in your pigs. I spoke just now about feeding shorts to the sows. You probably raise great quantities of oats, and it is generally said that oats are good feed for pigs. I say they are not. The pig is different to the cow, and you do more injury than good by feeding young pigs on ground oats. When you use shorts you have economy, and a feed that gives better results.

Mr. PETER SMITH: I have fed sour whey and have been successful.

Mr. LOUIS: Probably you have never taken an account of the grain that you fed with it. If you had fed one of the pigs on grain mixed with sweet whey and another lot

on the sour stuff I think you would have found that you would have made better results out of the sweet whey than you did out of the sour whey. I have said that it is desirable sometimes when finishing off the pigs to feed them on sour whey.

A MEMBER: Have you any experience in feeding roots?

Mr. LOUIS: No swine feeder, I care not if he is a dairyman or not, should ever go without roots, especially for winter purposes. In winter we go upon our barn floor and we gather up the clover leaves and the clover heads, a barrel full every morning, and we carry it to the hog house. We fill the barrel with water and we put a steam hose in and bring it to a boiling heat, and then mix grain with it. We find that we can winter our pigs and brood sows better in this way than in any other. Aside from this, each of our hogs during the winter receives a root. We are great people to grow squash. We grow an acre or two simply for the purpose of feeding. We do not grow them in the corn any more.

A MEMBER: How would pumpkins do?

Mr. LOUIS: Pumpkins are not as good as squash. They retain more water, and when you are fattening your hogs and can feed the one against the other, you will find they will leave the pumpkins and go for the squash. I use the old variety of squash.

A MEMBER: Has Mr. LOUIS any experience in feeding corn ensilage?

Mr. LOUIS: I have had no personal experience. Two or three years ago I was in Minnesota, when the man in charge of the insane asylum farm, which is one of the finest institutions in the State, came to me and said: "Mr. Louis, ensilage is the finest feed for hogs there ever was. I am wintering all my sows on ensilage?" I told him that I could not imagine that there was enough in ensilage to sustain the life of the sow, and warned him that if he continued to feed it his pigs next year would be born without hair and otherwise deformed. It may be good to feed ensilage in the winter as a change, but as a regular feed it can't be depended upon.

A MEMBER: What breed of pigs do you consider most profitable?

Mr. LOUIS: The one that gives me the greatest return for feed consumed. (Applause.) When we come to talk about breeds, we talk about a fancy. It is simply a point of fancy with every man. I would say let every man independently choose his own breed of hog—that which suits him best, that which suits his market best, that which gives him the best results.

A MEMBER: Have you fed artichokes?

Mr. LOUIS replied that he had, he was sorry to say. His first experience with artichokes was enough for him. He planted a couple of acres, and the first year he got good sized artichokes. Then they kept coming up year after year for five or six years—little things about the size of a hazelnut—and it was the greatest difficulty to keep them from spreading all over his farm.

A MEMBER: What about diseases of hogs?

Mr. LOUIS: Almost all the diseases that the human being is subject to the hog is subject to. He is subject to typhoid fever, measles, colds and hundreds of other diseases, and most of them are caused by injudicious feeding. For instance, probably one of the greatest complaints among your hogs is paralysis of the loins. You know, the hog that drops right behind and drags his feet after him. I presume I hit a good many men just now. That is simply the result of feeding. While the hog is the quickest of digestion of any of our animals, remember that when you stuff the animal to excess and feed injudiciously without any condiment or salt or feed your dairy product without any grain, you are injuring him. Constipation sets in and then you have the first step towards disease. As for colds, we know when we take cold. Let that observation be followed out in the case of hogs, and then we can avoid those little diseases that so often destroy the lungs of our hogs. It is better to avoid them than to look for remedies.

A MEMBER: How do you feed your roots?

Mr. Louis: I feed them raw, but when we have a great many, like we had this fall, we steam them and then mix the grain with them.

A Member: Where do you steam them?

Mr. Louis: We have a steam cooker that cost $35, and it takes us only about thirty minutes to set a barrel of water boiling.

A Member: Do you cut or pulp the roots?

Mr. Louis: We cut them with a spade, and then we cook them thoroughly, so that they almost pulp themselves, and then we mix the grain with them.

A Member: How often do you approve of feeding the hogs?

Mr. Louis: That is a good question. In winter time it is not well to disturb the hogs before daylight. I found that by experience. As our days are short, I believe that twice feeding in winter is better than feeding three times, but in the fall of the year and in the summer it is better to feed three times than twice. Feeding is one of the great arts. The trouble is that men feed a great lot of stuff all at once—more than the hog can consume. Let it be the maxim on every farm, no matter what the feed, never to give the hog any more than it will eat clean and go hungry to its next meal. Then you will find that you will make better growth on the young pigs, and that you are fattening your animals in a way that will make more gain.

A Member: What is the best time of the year for farrowing?

Mr. Louis replied that that depended upon the shelter that was provided for the hogs, and on how good a man the farmer was to take care of the sow. To illustrate this last point he showed that by overfeeding, a whole litter might be killed. He touched upon the importance of using caution in feeding the sow. She should be liberally fed, but not to excess. The pigs should have plenty of fresh air and exercise. The latter could be provided in the pen with the aid of a hazel switch when the weather was too stormy for the pigs outside.

A Member: Is there any remedy for paralysis?

Mr. Louis: The only remedy that I know of is to take turpentine or any liniment, and pour it freely over the loins of your hog. Keep the animals in a warm quarter and give them something that will have an effect on their bowels. There is a constipated condition, and you must relieve the animal. For general information, I may say that if you have a sick hog, and you must give him physic, give it to him this way: Take a piece of boiled pork and slice it about the thickness of my fingers. Then split it and put a few grains of calomel in. First, give the hog a little piece of the pork without the medicine. A hog must be pretty sick when it won't eat a piece of boiled pork. Hold it before him and he will swallow it. Then give him the other piece of pork with the calomel in it. Away it will go like the first. That is the nicest way of giving medicine that I know of.

A Member: How many grains of calomel?

Mr. Louis: According to the size and weight of your animal. You can give a hog at least four or five grains more than any man could take. Of course, you must consider the age of the pig. I am not here to advocate giving medicine to your hogs. I am advocating here to-day judicious feeding without medicine.

A Member: How do you manage milk fever when you have it?

Mr. Louis: You will have milk fever in your brood sow if you have fed her on a heating food before she farrowed. If you have fed her on barley or on corn, and have confined her, you can depend upon it that at the time she goes down to farrow she will have milk fever; her udder will be hard and caked. At these times you will find that she rises right up and refuses to let the pigs nurse. She stands right there and stares at them, and when she cannot relieve herself at all she then goes to work and eats her own pigs. There is a law of nature that teachers her what will give her relief. The only way that I know of to relieve her is to give her a lot of linseed oil. Pour it in some

milk on feed. Then get some hot water as hot as your hand can bear it and kneel down beside her. With a cloth bathe her udder in the hot water. She will have a fearful pain, therefore be careful. Keep washing the udder for about half an hour at a time. When the water cools get some more. Afterwards rub with liniment, and then I think you will be able to save your sow. Farmers often make another mistake. As a rule when a man sees a litter of pigs in his stable he is so pleased that he gives the sow an extra feed—the biggest she ever had in her life. He goes into the stable next morning, and then the chances are he will find that his sow has milk fever. She will refuse to let the little fellows nurse. Care should be taken not to give the sow much milk-giving feed until the little ones are able to take care of the milk. When you hear the little pigs squeal for the milk, and become hungry, then you can increase the feed from day to day. Give the sow immediately after farrowing a handful of shorts with some water, and you will find that you will never have any trouble.

A MEMBER: Have you any experience in feeding corn cob meal?

Mr. LOUIS: If you grind it fine—the cobs should be ground as fine as the corn meal—you will find that you can make precisely the same live weight gain out of a bushel of corn and cob meal as you can out of clear meal. The cob meal is an aid to digestion. But it should not be fed dry; it should be fed wet. There is no profit in feeding any kind of meal in a dry state. Another point is that hogs should be fed regularly. If you feed at eight o'clock to-day you want to feed at eight o'clock to-morrow; if at four or five o'clock, at that same hour the next day and right along. You will be surprised what a difference it makes in the gain of the hogs.

A MEMBER: At this time of the year would we feed at seven, twelve and six o'clock?

Mr. LOUIS: Those would be good hours.

The meeting then adjourned until the evening.

SECOND DAY—EVENING SESSION.

The Opera House in the evening was filled, and the session was a most successful one.

The PRESIDENT opened the meeting with a few remarks on the value of conventions. He said, in part: There is not a student of the high school here who is more of a student than the farmers who come to attend the meetings of this convention. They are students in the best sense. They realize the truth of the biblical phrase that they have to earn their bread by the sweat of their brow, and not by the sweat of their backs. I believe that such a convention as this is one of the most hopeful signs that we can see in this country at the present day. We hear a great deal now-a-days about depression in agriculture, and there is not the slightest doubt that there is a depression in agriculture, and a depression in almost everything else. One thing is certain, we have got to take things as they are. You cannot get out of agriculture; it always will be the basis of our prosperity. In order to make agriculture successful, it is more necessary now that the farmers should be students than ever it was. This country is not going to go down, nor is the dairy industry going to go down, in spite of all the difficulties, as long as the dairy farmers of this country, young and old, meet together and consult each other with reference to their mutual interests, as they have done yesterday and to-day, and as you will see them doing to-morrow. It shows that their hearts are in their work, and that they are eager for instruction and knowledge.

CARE FOR THE COW AND FEEDING HER FOR PROFIT

Mr. JOHN GOULD, of Ohio, then delivered the following address:

An almost radical change in the care of the dairy cow in the last twenty years has carried her almost into the domains of the tropics, for now every effort of the advanced dairyman is to give his cow 365 days of June weather, and as far as possible give her food throughout the year rich in character and full of succulence, and so place it before her that she may eat it with as little effort as may be, so that every energy, save of the propulsion of the organs of life, can be economised and turned into the channels of milk production. That the care of the cow is a leading factor in the question of dairying, if the matter of profit is considered, cannot be doubted, but at the start I disclaim for care and feed the title to all success, for there are cows well and ill-bred which, care for them as one may, and feed them into the domain of fatness or disease, that can never be made to attain to good dairy performance, for the reason that they did not have born capacity of large performance, and no after feeding or care can create new possibilities for these cows. Nature never builds over the milking organs of a cow, nor fashions on a sort of side delivery where richness can be added to milk at the owner's request any more than feeding and care will make a Shorthorn steer out of a native "browse eater," or liberal feeding of oats put speed into a flat-footed clay-eating colt.

So if a profit is to be looked for in the care and feeding of cows, there must be a selection at the start, and let us see if it is not possible to get our stalls full of cows that give not less than 6,000 pounds or more each of four per cent. milk in the year, and cows that have the individual power to turn food and energy into milk and not into undiscoverable channels, a sort of underdrain that saps the very life-blood of the business and breeds discouragement, and often ends in putting up the shutters to our business.

The breed of cow that we shall care for is not my purpose to discuss here beyond this, that she shall be a good one and adapted to the dairy business in hand. Everyone has his likes and dislikes. A big black and white might suit me, and not you, and so on through the list. But this is patent: It costs no more to care for and feed a good cow than a poor one, and try to feed great performance into her and fail at the end. Its no use to feed and care for a cow to give 10,000 pounds of milk in the year that will put no more solids into her milk in the year than another that will do as much with 6,000 pounds, unless one gets the pay in the fun of milking two or three tons of water for nothing. So in the care of cows, there is the item of labor against production, and the fellow had better put the three days spent in milking the water into better care and feeding of the cows that give less but better milk.

In this care of the cows one is quite as likely to overdo as to fail in doing enough. It is a question of when, how and what variation.

If the best results are desired there must be a care of the cow the entire year, and this has its twofold influence, first upon the cow and on the future offspring, for it is in the care and development of the cow that we are to look in a measured degree for improvement in future generations of stock. It now seems assured that this pre-natal influence must be looked to as a means of steady improvement of our stock for the advent of a sort with prepotency so strong as to actually beget a new breed, as in the case of old Justin Morgan, the Hamiltonians, and quite as possible in that great bull, the father of the Durham cattle, which is only the gift of a century. So in practice it is always the better plan to begin in the care of the cow years before she is born and have what might be called the "heredity of care" made conspicuous all the way through. I am in doubt if the time will ever come when it will be best for the farmers at large to possess dairies of all thoroughbred cows, and, from what I can gather, what are known as broken bloods are in general terms the best. But there must be a qualification to this term, for it is in breaking bloods to extreme degrees, that is, without order or judgment, that has given us herds of cattle that are so broken up in their blood that they are veritable

scrubs. In our care of stock we must take this matter into consideration, then select the breed we wish and practically stay by that breed or nothing. But here comes in a factor. The farmer says "I have a fairly good herd now of the selections of years of dairying." Good! Select them all over with scales and butter test. I say butter test, for whatever use the milk of a dairy is to be put, the fats in that milk will always be the basis of calculation of its value. Water makes neither butter nor cheese. Then select a dairy breed that suits you. Get a sire and begin to breed and select, but do not break the blood any more. Two ways will effectually break it up yet more. Breed the second time from a bull from this broken blood, and array forty forces against the one strain, or go and bring in yet another distinct breed and break the first cross in twain. Better by far to retain the sire of the first cross and breed his own daughters to him, and intensify the blood you already have, and get into this breeding in line, and so get a second generation with seventy-five per cent. of the blood you desire. To cross thoroughbreds is a mistake. The cross always results in a compromise—especial richness is never imparted to a tub of water—and at the second cross the breeder is at a standstill. He must now choose which of the breeds from which to make the second choice, and to choose either is to confess that the first was a mistake, and that the first steps must be retraced. I do not champion any one breed of cows as superior to all others Breeds have their places, but great dairies, whatever their breeding, are groups of selected cows, each cow representing herself, an individuality born with her, which may or may not be transmitted to her daughter; but quite as likely an inheritance she will give in trust to a son, to be given over to a second generation.

There must be a work of preparation on our farms if we are to attain high results with our dairies. Our farms must be put in order so that we shall grow not only good crops, but crops that we can employ to the best advantage. It means draining the swamps, getting the stagnant and foul water off from the land It means some hard work, but in the end your farm will look enough better to pay for picking up. Have you ever seen a man with a profitably good dairy on a poorly cared for farm? Never in the world; and so this care of the cow must have with it the care of the farm. The farm must also have conditions to correspond with what is going to be demanded of the dairymen of the future. We must have a condition of 365 days of summer on the farms. Care of the cow now means that we must have a warm, comfortable barn, well arranged so that when the cold weather begins we can shift this cow from a summer condition to an artificial condition approaching summer. I think the excavated bank barns have had their day and will disappear, and that the cowstable of the future will be on top of the ground—a wooden structure, double walled, well lighted, warm, dry, and free from dampness. These things I have never seen but once in my life in a bank-ground stable, and that was where the man had gone and built another wall of lumber inside the stone walls If you are going to be a dairyman, and dairy 365 days in the year—and the dairyman of the future is going to do it—even have to—you must have a barn that will present summer conditions. When we get our barn double-walled, with its air space, plenty of windows to make it bright and comfortable, and well ventilated, then if we are bringing in summer-like feeds to our aid, and will use these summer rations to support the cow, we shall succeed very well in saving some of this feed that has cost us a great deal to raise and has only been used as an air warmer. This brings us to another question about the stable. We must make the cow comfortable in the winter. How does the cow do in the field? Did you ever notice? She goes and eats till she fills "her silo" full, and then she lies down in a comfortable place, chews her cud, and assimilates that food and turns it into milk. Have you ever noticed this cow in the summer time start and walk around the farm for exercise? We want to do something to make this cow just as comfortable in the barn as she was out under the tree in the pasture ruminating, digesting and assimilating that nice feed of blue grass. The method of tying a cow up in rigid stanchions is out of date, but not abandoned. I don't know but that a cow can get used to that after a while, so that she likes it. Men have been shut up in a dungeon for twenty years and lived through it, and their gaoler said they were doing well. But the question is not one of money. The other fellow was tied up for another purpose. Here it is a question of tying up a cow

to make money out of her, and we can't do it and get the best results of the feed unless we make the cow in every way comfortable. And so I have come to the conclusion that it is best not to stanchion at all. We find out that all through life we have been doing a great lot of hard work, here and there, that never paid us. There was a simpler and better way to have done it if we had just stopped and thought. Give your cow a halter with a little slack, a nice bed, clean and warm, and light stables. Then we pretty closely approach that point when this cow laid down under the tree in the pasture. Do you say to me that cows tied with a halter cannot be kept clean? Theodore Louis, at a Minnesota institute, was asked the question why it was that so many people had such filthy hogs. "Did you ever notice," said Theodore, "the character of the men that owned them?" He meant that the hog was filthy because the men owning them gave them no chance to be otherwise. I think the cow will be clean in the barn if the man who owns the barn will give her a chance. The whole thing to me is very simple. It is simply a matter of making the manger low in front—eight inches high—and then it means a smaller gutter than we are usually using in our barns. Make the floor, save a fourteen-inch wide heel plank, of thin cut inverted sods, and use a fair amount of bedding. The next thing is the question of water. How many times does a cow drink in a day? That depends! I asked a man over in New York how much a cow drank, and he said she "drank all she could hold generally." There are very few men compared with this one who know how much a cow will hold. By observation and weighing I have found that every cow in my barn drinks on an average ninety pounds of water every twenty-four hours, and some of them by weight have drunk one hundred and forty pounds. And then the ways of drinking. We have cows that by actual count drank twenty times in twenty-four hours. They were drinking every little while. And then we had cows that only drank twice a day, and others that drank four or five times a day, and others who only drank once a day under some circumstances. The man who is going to make money out of his cows must provide so that their individual wants shall be met. This cow which wanted to drink twenty times a day could not be made comfortable by turning her out once a day and putting eighty or ninety pounds of ice water into her stomach. Did you ever see a cow try to warm five pails of cold water? They stand up with rounded backs and commence a sort of roll backwards and forwards with shiver accompaniment, and then men say: "See her shivering. She is tender. That breed of cows never were hardy." She was trying to do what her owner was not allowing her to do, drink a little warmer water and not shiver so much. The question is, how shall we water these cows? I have studied this matter of the watering of cows for years. I have tried all kinds of methods, put in patents and thrown out patents. At last we have got something of our own that suits us well. Mr. Gould then proceeded to explain this system. He told his hearers to imagine that the orchestra pit in front of the platform was the manger of the cows. Then the footlight arrangement would represent a water box put into the inside of the manger at the top thirty-two inches from the floor and nine inches deep. At the end was a great big tank. "Here comes in another question," continued Mr. Gould, whether in our warm stables that never freeze we can keep water warm enough without the extra danger and expense of putting a fire into the barns. All heaters are fire boxes, and all are liable to burn up the barn. At this end of my stable, standing just above the water trough, is a galvanized iron tank that holds fifty barrels, set up on a stout platform, fitted with an iron cover, connected with a well and windmill. We keep that tank full by pumping a little water in every day. Here this water stands at a temperature of fifty degrees. Then we fill up the trough with water, and our cows drink water at exactly the same temperature as that in which they stand. We find that method answers every purpose of heating the water. We simply ask the cows in our day to warm their own drinking water. This tank and pipe and all, cost, for each individual cow, about $2 to put in. The objection to the long continuous trough from which all drink is met by putting an inch iron pipe in the bottom of this trough in which a hole is drilled in front of each cow, with tank hose coupled to this pipe, and the water runs the length of the stable in this pipe in the trough, and so the water for each cow is a direct offering to her. The cow then drinks when she wants to.

When the cows are feeding we cover up the water box, and afterwards we lift the lid and fill them up. That settles the question of how much a cow drinks and how often she drinks. She drinks when she wants to, and as often as she wants to. One question more. I don't want the cows out in the winter at all. I put them right to their "knitting work" to make me milk. With a stable, light and warm, dry and plenty of water, we believe these cows are doing fairly well, because some of them started in giving 4,500 pounds of milk and are now bothering me with 6,000 and 7,000 pounds of milk. I am not afraid they are going to die sometime from lack of exercise, but to me it is a very profitable lack of exercise. Here is a cow at work, and she is getting her exercise by giving me milk—muscle power, nerve force, turned into milk—and I want them. You say the cows wear out sooner. Hadn't the cow better wear out in six years giving 6,000 pounds of milk a year rather than in twelve years giving 3,000 pounds a year? Now comes the feed of this cow. We have been told at this convention over and over again that we have got to economize somewhere. I say the same thing, but I don't mean living on less, or wearing less clothes. I mean economy, by getting more food per acre on our farms and of the character that we want and turning it to a more profitable account. To-day the problem confronts us that never confronted us before, "What are we feeding our cow for?" We feed her to keep her alive. Yes, we feed her to make milk. Yes. But did you ever think that out of four or five pounds that you feed the cow only one pound goes to make milk? What is that four pounds for? It is to make fuel and nothing else. You say you don't understand why this cow should want anything to keep up animal heat in the summer. I believe you! But did you ever take the temperature of a dead cow in June? Isn't she a pretty cold piece of cow beef, even on a hot summer day? That four pounds of feed in the summer goes to make up heat just as it does in the winter. There is no feed that we are feeding to day that is so expensive and that we get so little out of in proportion to its cost as meadow hay. It is almost entirely used for keeping up animal heat, and yet we are feeding fuel to this cow which costs us, say $10 a ton. We raise it ourselves; throw her another fork full. Did you ever consider that that is not economy? We shall get about a ton of timothy hay from an acre. I don't believe the Canadian farmer raises much more than we do, and we tell our assessor that we raise one ton to the acre, and I don't believe anyone tells fibs to the assessor. (Laughter.) Let us see what this ton of timothy hay contains. In the first place it contains twenty-six per cent. of what we call fibre, that is of no earthly use whatever. It is just simply filling—not satisfying, but filling. Nine per cent. is nitrogen, flesh former, muscle former and forty-eight per cent. starch fuel. And so if we figure the whole thing up we find that we get about twelve hundred pounds of fuel flesh formers out of an acre of timothy or fine meadow hay. Over the fence your neighbor this year raises a nice piece of corn—eighty bushels to the acre. There are twenty-eight hundred pounds of ears of corn, and seventy-eight per cent. is starch, a small per cent. is fibre, and all the rest is digestible. The stalks on which this corn grows has just as much feed value, just as much starch in it. We put the two together, and you have fifty-two hundred pounds of fuel out of this acre of corn, of which probably seventy-five per cent. is digestible. Can you afford to grow hay, when on an acre of corn you have five thousand pounds of feed value to burn in this cow's system to make animal heat, and on the other acre you have only a little over twelve hundred pounds of fuel. The cow says: "I don't care where I get my starch from, provided I get it rich and palatable." And so she eats the corn fodder when it is green and succulent, and does not readily eat it when it is not green. But you say, "I want to keep my meadow." Well, keep them and sell the hay. Here comes in another question right alongside of this. What shall we feed with this feed? We have got all the fuel we want. Now we want something else to make rich, red blood. Something to give muscle, and strength, and power of locomotion. Then we come down to something that is represented by the nitrogenous food. Here comes in another class of foods, our oats, our buckwheat, our bran, and our shorts, and our oil meal, and our cottonseed meal. Now, while we have to provide five pounds of fuel, we only want one pound of the rest to balance up this ration to give us the strength and muscle and nerve that this cow needs. It is a question of raising some peas and some oats, and exchanging the oats for mill

feed, because I say that a cow will not get along so well on oats as she will on mill feed. She never gets tired of mill feed. We can supplement this with peas. Over in New York state, where buckwheat is only twenty cents a bushel just at this time, they are having it ground, taking out the best of the flour for the family and letting the cow have the middlings, and they find that it is very nitrogenous—almost equal to bran and one of the cheapest feeds. During the last two or three years I have been trying by a series of experiments to bridge over the time between the corn soiling and the opening of the silos. There is a time, you know, in late October and November when green foods are hard to get, and dry feed will not keep up the flow of milk. Can we bridge this period? I have tried everything, and at last have settled down to this: We grow a crop of peas and oats and then we turn the cows into them for three or four hours each day, and the result is that the cows never show any difference between the green corn soiling and the silo.

A MEMBER: Did you sow the peas in August for the October and November feeding?

Mr. GOULD: The last week in August.

A MEMBER: What time did you turn the cows on?

Mr. GOULD: We turned the cows on immediately after the corn fodder had dried up after cutting. The corn fodder we had been cutting up had got so dry that the cows refused to eat it up clean, and hence was not very profitable. Continuing, Mr. Gould said: One thing more. We are believers in the silo. We have had two now for ten years, and we have had some little to say about them to the public and in the papers. (Smiles.) As soon as the cold weather sets in we open up the silos. We gradually keep the cows in nights more and more; when the weather changes we keep them in stormy days, and when the cold weather settles in we put the cows in the barns and we open the silos. This is usually about our Thanksgiving Day, and the cows stay until Easter Sunday. Then, if it is pleasant, my wife puts on her new bonnet and goes to church, and the cows are also turned out. If it is cold and stormy both stay in. (Great laughter.) Our ration for the cow during the winter is a very cheap one—ensilage, fifty pounds a day; straw, two pounds a day; hay, about two pounds; and we feed six pounds a day of grain, five pounds of wheat middlings, and one pound of oil meal. We sometimes change this, and in place of the oil meal put oatmeal. Then after a few days we go back to oil meal. I have never found yet that it pays me to feed a ration exceeding six pounds of mixed feed a day to the average cow. What are the cows making? I am getting ninety cents a hundred for milk at the stable door this winter. My cows are giving me thirty pounds of milk daily—that is twenty-seven cents. Out of this I take eight and a half cents for the cow's rations. Is this profitable winter dairying? It is a question of taking care of my cows. Cheaper and better rations are the questions that we have to meet. It is not a question that we can put off until to-morrow. The solution of it must be entered upon to-day. And so along this line I believe the solution of this question is better care of the cows, and better cows, and making the dairy more continuous. I do not say that every factory should make butter and cheese together. I believe it is a detriment to the industry, but I do believe it is possible to make cheese in the summer and butter in the winter

A MEMBER: How often do you feed each day?

Mr. GOULD: I feed twice a day all the cows will eat and eat up clean, and then we give them the balance of the day to ruminate and have a good time generally. But some one says to me, "You eat three times a day." Yes, but I have only got one stomach and the cow has got four. The cow wants time to ruminate and digest the food. My food is digested at once. Her food does not digest until the second time it is eaten—which is cud chewing. But, anyway, I do not know whether I would not be better off on two meals a day myself and save a meal. I don't know that I have anything more to offer on this question. I only want to say standing here to night, my last appearance before I go away, that I can assure you I fully appreciate the hearty welcome which you Canadians have given me. I was told before I left home that I would be captured and held prisoner of war if I went to Canada. I told the boys in reply that you level-headed Canadians, unlike them, didn't go off at half cock every time they heard a duck gun in a Virginia swamp. I am glad I came to Canada, and shall come again, war or no

war, if I can get across the lines, and it will only need an invitation for me to make the attempt. Wishing you all prosperity and never-changing friendship, I salute you with heart-felt appreciation and my best bow.

SOME PRACTICAL EXPERIENCE.

The PRESIDENT then asked Mr. E. D. TILLSON, of Tilsonburg, to speak a few words, introducing him as one of the remarkable men of Western Ontario, a man highly respected where he lives and where he is known, and a man closely identified with agriculture, as with a great many other matters.

Mr. TILLSON, after remarking that the call from the President was totally unexpected, said he did not altogether agree with Mr. Gould in regard to a basement stable. He thought he had one of the finest stables in the country, and it was a basement. Mr. Gould had said they were damp and cold, but his was warm and dry. It was quite light, because he had windows all around it.

Mr. GOULD: A basement barn in our country is a bank barn right in the ground.

Mr. TILLSON, continuing, said he thought his system of watering was far ahead of that of Mr. Gould. His was so arranged that each cow had fresh water. Mr. Gould had a long trough, the water ran the whole length, and the cow at one end had to drink the water that had passed all the other cows. He approved of raising and feeding corn. He had gone into it very extensively. He found that corn ensilage was the cheapest feed that he could grow. He fed it both in summer and winter. He thought it was the most convenient and cheapest food that one could have in the summer. He fed ensilage and clover hay. He thought clover was far ahead of timothy. Since he had been trying in practice what he had read and heard, he had improved his cows. He kept a record of the milk. He weighed the milk from each cow, and registered it in a book, so that he knew just what every cow was giving him. Then he tested the milk by the Babcock tester to know just the quality in order that at the end of the year he might know just what every cow had done. He raised all his heifers, and kept weeding out the poor ones and breeding the best ones He had by so doing improved the cows. A year ago last spring he had ten two year old heifers come in at the same time. He milked these heifers just twelve months, and in that time they gave 10,480 pounds of milk each. One of those heifers had now come in again, and she was giving sixty-three pounds a day right along. The average of the strippers, those which were drying off, was twenty-five pounds a day—7,500 pounds a year. The quality of the milk was 3.75 per cent. of fat. He believed in keeping the cows in through the winter. He did not turn them out at all except on nice, warm days, when he let them have a few hours' exercise. In regard to corn growing, although ours was not a corn country like that where Mr. Gould came from, yet his crop had been away ahead of Mr. Gould's. He had fifty acres last year that produced just twenty tons to the acre—1,000 tons which he put in the silos. This corn was well cared. He had weighed the corn and measured the acres just so that they might know where they stood, and it cost him just sixty cents an acre to grow the corn and forty cents an acre to put it in the silo. It just cost him $1 per ton to grow the corn and put it in the silo. This winter, not having any hay, he had fed very heavy of ensilage. He fed sixty pounds of ensilage, but had he had plenty of hay he would only have fed forty or fifty pounds of ensilage. Next summer he intended to keep his cows in most of the time. The flies and the drouth were so bad that his cows last summer gave less milk than in the winter.

The PRESIDENT: I do not believe there is a farmer in this western district but who, if he were to visit Mr. Tillson's farm, would learn something. He is presenting an object lesson to the farmers of the country, because you can get without expense the results of his experiments with large means. He is doing good along the same lines as the Government is doing when it establishes model farms. For that reason I am sure you are very glad to hear even in a very brief way the results of some of his experiments.

FINE FOOD PRODUCTS IN ONTARIO.

Prof. ROBERTSON said: I am to speak of the resources of this Province for fine foods. The more I learn from frequent travelling of the almost unlimited resources of the Dominion for profitable agriculture, the more admiration I have for the Province of Ontario. Sometimes the people of Ontario have a little inclination towards a tendency to suppose, or to have it said that they do suppose, that if a man speaks very well of the fruit-producing resources of British Columbia, that therefore he has less liking than before for the fruits of Ontario. But only a man who knows Canada from ocean to ocean can appreciate Ontario at its best and true worth. And so, while I have something to do with all the provinces of Canada, I come back every year to the Province of Ontario with no abatement of my admiration for the resources of this beautiful Province. Still, of all the good things Ontario possesses, I do not know of anything that cannot be made better than it now is by the intelligence and the industry and the skill and the patience and the justice of men and women, and just so far as this Western Dairymen's Association can stimulate the presence of these things, so far does it become one of Ontario's valuable resources for wealth. There is an opinion sometimes that the sources of wealth are all material things that can be weighed and measured and bought and sold. It is not quite so. While the natural resources for wealth may be spoken of as soil, water, climate, and building materials, these cannot be realized upon into forms of usable wealth except by the application of intelligent labor. In so far as this Association causes the people of the Province to exert themselves in right directions, in so far does it enable them to make the resources of the Province available for the well-being of the people. As sunshine acts upon the latent life of seeds which are planted, and wakes them up into the doing of something, so the kindly energies of this Association have been waking up the farmers throughout the Province and causing them to bring things to pass. As inert material is quickened and glorified through the contact of the life of the plant and the application of sunshine, so the great masses of the population are wakened up and lifted up by the humanized sunshine which finds expression through such organizations and conventions as this. Of course, some few people see no good in these things. They are those who never go into the sunshine business; and the sufficient answer to their unbelief is that the presence of a blind man does not abolish the beauty of flowers, nor prevent the sweet sunshine from enriching the earth with these and many other good things. In considering the natural resources of Ontario, the first impression and conclusion is that the soil is generally a fertile one. A fertile soil does not always carry rich people. The delta of Egypt, which probably contains the richest soil in the world, is tilled by the poor fellahs, who have not risen above the lowest estate during half a century of centuries. Their labor has been of a low order, and to intelligent "labor the gods give all good things," including the choicest products of soil with the largest profits from them.

In Ontario, the live-stock interests are inseparably interwoven with the methods of agriculture by which farmers can make a good living. Their prosperity is dependent upon the measure of success with which they rear, feed, and market animals and their products. By that course only can the fertility of soil be maintained, with a rotation of crops and profitable employment for farm hands during the twelve months of the year. By growing such forage crops as are adapted to the soil and climate, it is possible to obtain large yields of nutrients per acre. The following chart shows the nutrients obtained per acre from five different crops:

——	Albuminoids.	Carbohydrates.	Fats.
	lbs.	lbs.	lbs.
Indian corn, 9,000 lbs. dry matter	873	7,371	288
Horse beans, 12 tons	653	1,814	167
Sunflower heads, 7½ tons	352	2,373	729
Hay, mixed, 2 tons	271	2,888	97
Roots, carrots, or mangels, 20 tons	480	4,230	68

The fine food products from these would be more than sufficient to sustain one person per acre. The food producing resources of Ontario would not be taxed beyond what they would give in response to good culture if a population of twenty million of people, instead of two millions, was to be fed. As the ultimate object of all farming is to provide food for the people, the larger the quantity of the valuable constituents of food which are obtained per acre, the more chance is there for the farmer to make good profits from his business. In the competitions between foods for preference in the market, the fittest in regard to nutritive qualities, pleasant flavor, and low cost of production will doubtless survive and succeed. One pound of cheese contains about as much nourishing material as two and a quarter pounds of beef. In order that Canadian products might obtain a preference in the markets to which they go, it is necessary that they should be wholesome, nourishing, nice in taste and appearance, and, if they go to Great Britain, of reputed respectability as to origin and name. An English family would hardly offer an honored guest a roast from Australian frozen beef under its own name; but they might be willing to let the retail butcher charge them six cents per pound more for the same article if he did call it "best Scotch," or "best English." In brief, the sentiment for reputed respectability in name of even a roast of beef makes the English willing to pay the retail butcher at the rate of from four to eight cents per pound for politely misrepresenting the facts to them. The consumption of fine food products, such as can be produced in abundance in Ontario, is very large per head of the population in Great Britain. It is put at one hundred and thirty-five pounds of beef, fifteen pounds of butter, and thirteen and a half pounds of cheese. Of these quantities, thirty-eight pounds of beef, nine and a half pounds of butter, and five and a half pounds of cheese per head of the population are imported. The value of the imports into Great Britain in 1894 of living animals for food, dressed meats, butter, cheese, poultry, eggs, and such fruits as Canada could supply, was over $280,000,000. It should be our policy to beguile the consumers and merchants there to depend upon us for a large share of what they need of these things. In order to do so, improvements must be made in our methods and means for preserving the perishable food products while in transit from the place of production to the consumer. It is necessary that they should reach the consumers in their very best condition. In the case of butter, it is most desirable that it should be put into a cold place at a temperature not higher than thirty degrees Fahrenheit within two days after it is made. After cheese are cured, they also should be put in a cool place. Experimental shipments during the past summer demonstrated the great advantage which would result to the cheese trade if cold storage accommodation on board the steamships was provided for all cheese to be exported during the months of July, August and September. The cold storage service on the steamships for butter during the summer was very satisfactory, but it may be further improved. In order that cattle and meat products of Ontario might reach the consumers in better condition, it is necessary that some radical changes should be made in the methods of transportation and distribution of them to the consumers.

Last year a new competitor appeared in the British markets in the form of one shipment of cattle from Australia. However, it is not likely that the experiment will be repeated, as the cost for freight, insurance, fodder, etc., amounted to $68 per head; the cost for these for sheep came to $6 per head. The freight charges on live cattle from Canada to Great Britain, while not too high for the space occupied on board the steamships, has been much higher than the necessary expenses of carrying the dressed meats from the same animals to the same ultimate destination. When sent forward in the best condition, the hindquarters of beef were selling, during last summer, for the six months ending 31st August, at from $10.50 to $13 50 per 100 pounds. The whole carcases were selling at from $9 to $11.50 per hundred pounds. The expenses necessary for transportation of the chilled meats in cold storage from Ontario to the same markets where these prices were being paid need not, and would not, exceed two cents per pound. That would permit prices at least from $7 to $9.50 per 100 pounds to be obtainable here, instead of the prices which are current at the present time. There is a great difference in the value in Great Britain between chilled beef, such as can be sent from Canada, and frozen beef. The latter does not fetch much more than one-half of the price per 100

pounds of the former. There has been a decided falling off in the shipments of cattle from Ontario during the past few years. The shipments from Canada were nearly 20,000 head less in 1895 than in 1890; and in the shipments of 1895 were included some 40,000 head from Manitoba and the North-West Territories, from which places in 1890 the exports were very small. If we get dressed meats to the consumers in their best condition under the name "Canadian" well established, a permanent trade connection between the consumers and the producers will be created, and thus the latter will be enabled to get their rightful share of what the consumers pay for their products. A plan for the opening up of a dressed meats trade is to be submitted to Parliament. If it is accepted and acted upon, arrangements will be made for the sale of Canadian chilled meats, under their own name, in depots in many of the large cities in Great Britain. The plan will provide for the Government opening up the business for one year only, and the commercial agencies in Great Britain will be so chosen and managed that men of capital and knowledge of the business there will continue the trade in dressed meats from Canada afterwards on their own account. After the first year it will be necessary for the Government to appoint inspectors of meats, in order that the meats at any of the abbatoirs in Canada for export may be graded according to the standards established during the current year under the arrangements made by the Government. That will enable the buyers in Great Britain to purchase Canadian meats of certain recognized standards of quality, as they now purchase Canadian cheese and butter. That will stop the undesirable practice of consigning our perishable food products, which at present is the case with cattle and sheep. While this is a new act on the part of the Canadian Government, the manner according to which the business will be administered is not new in Governmental affairs. In 1886 cheese and butter were purchased by the Government of the Province of Ontario and sold in small packages at the Colonial and Indian Exhibition to advertise the excellence of Canadian cheese and butter there. Work of a somewhat similar kind has been undertaken by the Dominion Government in establishing dairy stations and managing the financial part of the business for the farmers until the channels were opened up and the farmers had acquired sufficient knowledge to carry on the business successfully themselves. Similar work was done by the Imperial Government of Great Britain in India to establish and develop the tea trade there, which is now of great importance to the prosperity of that empire. In that case the Imperial Government purchased the small farms, procured the plants, hired the men who grew the tea, and marketed the same, until they had demonstrated the feasibility and profitableness of that branch of culture. With the opening up of a trade in dressed meats, such as beef, mutton, pork and poultry, something could be done in the way of improving the marketing facilities for collecting and marketing Canadian eggs and fruits. Doubtless with this major industry would grow up such minor and associated industries as the rendering of tallow, the tanning of hides, and the making of glue and fertilizers. These seem to be the means and ways whereby and wherein at the present time it is most desirable that the Government should lend its powerful assistance for the development of the resources of the Province of Ontario in dairying. Other provinces would reap an equal share of benefit from such action.

The convention adjourned to meet on Thursday morning.

THIRD DAY—MORNING SESSION.

Despite the fact that a large number of the delegates to the convention were unable to remain to the sessions of the last day, the meetings both in the morning and afternoon were unusually large, and the interest displayed by those in attendance exceptionally great.

Mr. A. T. Bell took the chair at the morning session, and introduced the first number on the programme.

MISTAKES IN CHEESE MAKING AND HOW TO AVOID THEM.

Mr. T. B. Millar then read the following paper:

I have been asked to bring before this meeting some of the mistakes made in cheese making that have come under my notice during the past season, and to suggest how they might be remedied. I shall do so as briefly and clearly as possible.

Milk. A mistake that is made by a great many cheese makers is accepting milk that is quite unfit for making fine cheese. By doing so, a number of makers have hurt their own reputation and that of the factory under their charge. Several such instances came under my notice during the past season. I visited a number of factories where the cheese had been rejected on account of flavor, and after a thorough investigation I found that the maker, in almost every case, was accepting milk which, although quite sweet, had such a bad flavor that it was impossible to make a first-class article of cheese from it.

In a case of this kind I would advise the maker, or if he cannot, then one of the directors, to go and see the patron and find out wherein the trouble lies, and suggest some way of removing the evil. As a rule if this is done the trouble ends there, on the other hand, if it is neglected, the chances are that their cheese will be rejected the following sale on account of the objectionable flavor.

The best results from cheese making are attained only when made from a good quality of milk. Then it behooves every cheese maker to try to educate his patrons to furnish milk in first-class condition, and unless they do so they are a detriment to the factory as as well as to the industry at large.

Ripening. Maturing the milk too much before setting is a very common mistake. Very often I find makers dipping their curd with half an inch of acid before it has had time to cook, quite often dipping in less than two hours from the time it was set, whereas it should remain in the vat two and one-half or three hours. The result is that they have a soft mushy curd that requires a great deal of stirring in the sink, and which will make a harsh, coarse-grained cheese, lacking that silky texture so very desirable in all cheese. Set the milk early enough to give time to have the whey expelled and the curd properly cooked before the development of acid takes place.

Starter. Regarding the use of a starter there is a difference of opinion. While I know that a small quantity may be used to advantage in many cases, yet a number of makers make a mistake by using too much and setting the milk at about the same stage of maturity as when not using it, so that the curd develops acid quickly in the whey, and after dipping lies in the sink for hours before it is matured enough for salting. Cheese so made has a flat or dull appearance and does not seem to have any life in it.

In using a starter always set the milk at an earlier stage than if you were setting without one, and be sure that the starter is of a clean flavor, otherwise it will taint all the milk in the factory. There is an ingredient that should always be used with a starter, but which is often overlooked, and that is good judgment on the part of the maker. I would advise a small quantity of starter with a larger portion of judgment. In this way good results may be obtained.

Rennet. In the use of rennet a great many mistakes are made, some not using enough, others using far too much. I find the quantities used varying from one and one-half to four ounces of rennet per 1,000 pounds of milk. With the first amount the cheese were stiff and slow curing, with the last the cheese were ripe in two weeks, and as a matter of course were "off flavor" long before they were shipped. It is not a safe plan to go by any fixed quantity at all times, as a great deal depends on the strength. Enough should be used to cause perfect coagulation fit for cutting in from thirty to thirty-five minutes. As a general rule this requires about two and one-half ounces of Hansen's extract per 1,000 pounds of milk at a temperature of 86°.

Cutting. When the curd is ready for cutting do not make the mistake that some do of rushing the horizontal knife quickly through the curd, causing a wave to form in front of the knife and breaking the curd instead of cutting it. Commence cutting early and take plenty of time to do it right.

Cooking. After the cutting is completed, stir the curd carefully by hand for ten or fifteen minutes before any steam is applied. Heat slowly at first, and continue stirring by hand until the curd becomes firm, then a rake may be used to advantage. A mistake here is often made by putting the rake into the curd immediately after cutting, and using it in such way as to break the curd, causing a loss both in quantity and quality.

Acid in Whey. The amount of acid used for dipping varies very much, from one-eighth to one-half and sometimes three-fourths of an inch. It is a mistake to develop one-half inch of acid in the whey before dipping; one-quarter of an inch is quite enough for any curd, especially in the case of a bad-flavored one, which should be got out early, for the longer it remains in the whey the more decided the flavor. With a curd of this kind better results may be obtained by raising the temperature two degrees just before dipping and keeping it warm in the sink until ready for milling; then air and mature well before salting.

In the Sink. Turn the curd every ten or fifteen minutes, or often enough to keep the whey from gathering in pools on the curd, and when piling leave a space of an inch or more between each tier to allow the whey to escape.

Milling. Mill or grind the curd early and thus save butter fat as well as improve the flavor and texture, or body of the cheese.

Airing. In the warm weather, after milling, if the curd is maturing nicely, leave off the cover and turn the curd every few minutes, exposing fresh particles to the air. Doors and windows may also be left open.

Salting. Use some brand of pure dairy salt, and also practice judgment in using it. Do not make the mistake of using three pounds of salt per 1,000 pounds of milk on a dry curd, or two and one-half pounds on a moist one. I tried some cheese at the Western Fair last September, which were spoiled simply by over-salting. As a rule from two and one-half to two and three-fourths or three pounds of salt may be used per 1,000 pounds of milk, but the amount of moisture in the curd must always be taken into consideration.

Putting to Press. Do not put the curd to press too warm. Cheese put to press at 90° will cure and go "off flavor" much quicker than if the same had been put to press at 80° or even lower. Try to get your cheese of a uniform size, clean and well-finished, and on no account allow a cheese to be taken into the curing room with those unsightly ends which may be seen in a number of curing rooms and which are always a matter of great annoyance and loss to a buyer.

Curing. In the curing room leave the end or cap cloths on the cheese for two or three weeks, or better, until the cheese are to be shipped. Be watchful to see that there are no cracks in the end of the cheese, and keep a little *clean* whey butter with which to fill them up in case any should appear. In the hot weather strive to regulate the temperature in the room as far as possible, airing it well every evening as soon as the temperature outside is lower than that of the curing room. In the spring and fall, by paying attention to the fire, maintain a regular temperature of from 60° to 65° or as high as 70° if a quick-curing cheese is desired. A great many well-made cheese are spoiled by neglect in the curing room. I have been in curing rooms in the spring and fall where the temperature was down almost to freezing point, and not a spark of fire in the room, the fresh cheese being placed on the shelves, where, instead of curing, they were simply becoming pasty and unsaleable.

Mr. Bell: I hope we will have a good, lively discussion. There have been a great many valuable points made by Mr. Millar. The inspector is quite capable of answering any questions that may be put to him regarding his paper.

Mr. WHITE: If you had a perfect curd, and everything seemingly right, what temperature would you recommend before going to press?

Mr. MILLAR: I prefer a temperature about eighty degrees. In the hot summer days my advice is to air your curd well, and get it as cool as possible before going to press. In the spring or fall a temperature of about eighty degrees is very suitable. We have had excellent results from lower temperatures.

Mr. WHITE: What do you think about letting the curd lie after the salt is melted, everything being right, before going to press?

Mr. MILLAR: As soon as the salt is dissolved properly I would put it to press.

A MEMBER: In a cold room would you advocate putting to press about ninety degrees, or would you adhere to eighty degrees?

Mr. MILLAR I would not put to press above eighty degrees. I would keep a fire in the press-room, if possible, and use lots of hot water on the hoops during the cold weather.

A MEMBER: What is your experience with the hot iron test? After the curd is ground, would you advise us to go by the hot iron test?

Mr. MILLAR: No. I would not depend upon the hot iron test after the curd has been milled. I think it is a good thing to use the hot iron before grinding. I have milled lots of curds with less than three quarters of an inch of acid when they were working fast. You get rid of the sour whey flavor, and you have much nicer cheese. If the air is perfectly pure I think it would be an advantage to have the room well aired after the curds are milled. The day of keeping the making-rooms closed up has gone by. I would say open the windows and doors, and have the room well aired after the curds are maturing nicely.

A MEMBER: Do you approve of washing gassy curds?

Mr. MILLAR: I have not had much experience with washing. If you are washing them, wash immediately after dipping for a fast working curd or a very bad flavored one. If you leave it till after milling you wash out a good deal of the fatty substance.

A MEMBER: My experience in that has been that I have had better results in washing curds after they were milled—just directly after they were milled.

Mr. MILLAR: My experience has been the other way. I prefer washing immediately after dipping. I would like to hear some other maker's opinion upon that.

A MEMBER: What temperature would you have the water for washing your curd?

Mr. MILLAR: At the time of dipping about the same temperature as the curd—ninety-eight degrees to one hundred degrees.

A MEMBER: In washing the curd immediately after dipping, is it not rather difficult to keep it fine enough—loose enough?

Mr. MILLAR: I do not think so. If you use the water too hot, of course, it will run together, but if the water is about the same temperature as the curd it is all right.

Mr. BRYAN: My experience always was that washing a curd with water seemed to make a weak cheese. I have not had good results

Mr. MILLAR: My own opinion is that it is better not to wash them if you can get along without doing so. In my own work I do not wash a curd at all. I try some other plan of handling it. Where I get a really bad flavor I draw the whey early—draw it down close to the curd, and then, just before it is ready to dip, I run up the temperature two or three degrees. Then I mill it early, and air and mature afterwards.

A MEMBER: I have had curds that before they were heated up were ready to run off.

Mr. MILLAR: Well, run them off as quickly as possible. I would not wash them; I would stir and air them well.

Mr. WHITE: As to the weak cheese referred to by Mr. Bryan, I think that if the right kinds of salt, acid and rennets are used, you will not have weak cheese. That is my experience.

Mr. BUTCHERT: The drift of the discussion seems to be how to make good cheese out of bad milk. Gassy curds, quick working curds and all these things are the result of bad milk. There is no man living who can make good cheese out of bad milk. As a cheese-maker I know you cannot make perfect cheese out of imperfect milk, and as a farmer I know there is no reason why poor milk should go to the cheese factory. I have been sending milk to the factory for four years now, and I make a practice of keeping home my Saturday night's milk. I used to make cheese on Saturday nights, but I did not like it. and since I have quit making cheese I do not send my Saturday night's milk to the factory till Monday. When it is milked Saturday night I take it to the trough and cool it, and put it down in the cellar. I do the same with Sunday night's. Then on Monday morning I cool the milk of that morning, and I put all the milk together and send it to the the cheese factory in good condition. Now, if I can do that, there is no reason why everybody else cannot do the same thing. If the milk is proderly cooled it will never go to the factory in poor condition, provided the cows have not been drinking bad water. The chief cause of tainted milk is tainted water. I have seen milk in the early spring which had the smell of the cow manure. You will probably have noticed that when the cows are out on a spring day they will gather around the manure piles and drink the water that stands there. You let the cow drink that water, it passes through her udder (and it doesn't get any cleaner in that process), and then you send it to the cheese-maker and ask him to make good, perfect cheese out of it. He cannot do it; he can not make good cheese out of it, let him try never so hard. The cheese-makers, to my mind, have got to that point where they can not improve the cheese very much without our help. If we will provide good, wholesome food for the cows, and good, wholesome water, I will guarantee the milk will be all right when it comes from the cow. The cow is always honest; she gives just as she gets. She will give good, wholesome milk if you provide good, wholesome food and water. Then, if you will take that milk and cool it down to 60°, and as long as it is in your care keep it at that temperature, it will go to the factory in good condition, and the cheese-maker can make good cheese. He will not then have to consider whether he has to wash that curd. The price of cheese has something to do with the quality, although not very much. It seems all to get about the same price whether it be good or bad cheese, but the day is coming when the quality will have more to do with the price.

A member asked whether Mr. Butchert did not find that the cellar tainted his milk, to which that gentleman replied that he never had any trouble because his cellar was dry and clean.

Mr. BLANEY: Do bad water and bad feed cause gassy curds entirely?

Mr. BUTCHERT: There may be other circumstances, but bad water and bad feed are the principal causes. Of course something may come in contact with the milk after it is drawn from the cow.

Mr. PAYNE: I heartily endorse what Mr. Butchert has said in reference to cheese-making. We know that when cheese are sent to exhibitions such as the World's Fair, where the judging is done by the scoring system, about fifty per cent. of the value of the cheese is based upon the flavor. I think the flavor is one of the most essential points of a cheese. Let the cheese be good in every other particular, yet lacking in flavor, and it is a poor cheese when we put it into our mouths, which is the ultimate end of all cheese. I think Mr. Butchert's arguments are good. I like the point he made that we should avoid taking in milk that is not in the right condition. I think as long as we cheese-makers continue to take in milk that is not right in flavor and other qualities we cannot be expected to make good cheese. The longer we continue to do that the longer we may have to do it. If we give the patrons to understand that we cannot get first-class results out of second-class milk they will be less apt to send us poor milk. I have had sixteen years' experience in cheese-making and my opinion is that it is best to reject this milk.

ever time, or almost every time. It is better to run no risk—to keep away from the dangers as far as possible. By passing all the milk under his nose a man becomes acquainted with the smell and can easily detect the poor milk.

A MEMBER: I think a great mistake is made in putting milk in the cellars. It is a well known fact that most of the cellars in this country are constructed with no pretense of ventilation or of light, and the milk stored in them is tainted by a close odor. The same remark applies to many of our stables. We go into the stables that were constructed eight or ten years ago, and we find that little attention was paid either to light or ventilation. Enter them at this time of the year, or in the summer when the cattle are in for milking, and you will notice these confined odors there from the cattle. We find the cows breathing the same air over and over again until it becomes perfectly foul with that animal odor. I am glad that in constructing cellars and barns during the last year or two great attention has been paid to light and ventilation. I know barns where the ventilators are open through the coldest weather, and they tell me it is plenty warm enough for the cattle and there is not the slightest trace of that close odor.

Mr. BUTCHERT: Every cheese-maker who has been any length of time in the business has seen when he poured the milk out of the can a lot of settlings at the bottom of the can, and sometimes there was something in the milk that would not settle, but would float. If he would smell that he would find it to be cow dung. You may as well call it that at once. Who put it there? It was either the cow or the man. The cow put her foot in the pail or the man pulled the stuff off the cow somehow. I have seen other cans of milk at the factory that were just as clean at the bottom as they were at the top. There was not a particle of settlings in the can at all. There is no need for settlings in the milk; there is no need for that cowy odor at all. If the man will take a cloth and rub the cow's flanks and udder sometimes and milk carefully he will have just as clean milk as possible. There need be nothing in the milk that ought to be strained out of it. When you get the milk out of the cow's udder there is nothing you can strain out. If there are any odors in it you cannot strain them out.

A MEMBER: You never find bad flavors in clean milk; they are always found in milk when there is a sediment.

Mr. BUTCHERT: The only flavor you would find in clean milk would be a little sour flavor.

A MEMBER: Will you impress on the farmers how much more difficult it is to make good milk into cheese than bad milk. It takes thirteen pounds of poor milk and eleven of good milk.

Mr. BUTCHERT: That is where the greatest loss is in the year. You have heard about washing curds and grinding afterwards. All this means unnecessary work and consequently expense. If the patrons just knew that there was no gain with tainted milk all the way through I think they would be more careful. I know there is a loss, and I don't like to share the loss with other farmers, and I know that I am sharing. I know that the milk that I am sending to the factory takes but a trifle over ten pounds to make a pound of cheese, whereas some sent by the other men takes twelve or thirteen pounds.

A MEMBER: Did you ever weigh the curd the same day, the one tainted and the other not.

Mr. BUTCHERT: Yes, and I found a great difference. That all comes out of the farmer's pocket; the buyer does not lose anything by it.

A MEMBER: What days of the week does the poorest milk go to the factory?

Mr. BUTCHERT: About Tuesday and Wednesday. We had the poorest yields on those days.

A MEMBER: I suppose we can assume that every farmer takes a portion of the cream off the milk every day?

Mr. BUTCHERT: I do not. I am a farmer myself, and I do not take it off, so I do not "assume" it. There are certain people who dabble a little with taking the cream off. Mr. Millar will confirm that. The Babcock tester does not make people honest. I have heard it said on the platform that it will make people more honest. There has to be a greater power than that take hold of a man's heart before he can be made honest. The Babcock tester will make him afraid of his dishonesty—of being found out. There are people who make a practice of taking a little cream off the milk every day—not very much—and they do not deny it. A pint of cream will make pretty near a pound of cheese. Say a hundred patrons take off a quarter of a pint each every day, that is twenty-five pints, and it means a less yield at the factory of twenty-five pounds—one good cheese less every day.

Mr. BLANEY congratulated Mr. Butchert on his straightforward stand. He pointed out that where a farmer lived between two factories, almost as near to the one as the other, the cheese-maker was apt to close his eyes to the fact that the patron was taking cream off his milk for fear he should lose him altogether. A man had told him since he came to the convention that a man could not be successful in this world and at the same time be honest. He denied it, but he admitted the honest man had to be very far-sighted.

DAIRYING IN MANITOBA.

Mr. J. A. RUDDICK, of the Dairy School, Kingston, then made a short address on dairying in Manitoba, the North-west Territories and British Columbia. He said he did not intend to take up the time at that juncture with any lengthy discussion on dairying in that part of the world. He happened to have been out there the past two summers, and had seen a good deal of the country. He had been wherever dairying was carried on, and he would give a few figures to show the development of the industry in that part of Canada. The returns of the Manitoba Government showed that there were fifty-three cheese factories in that Province. This, however, included a number of small factories, really dairies where the milk of from one to two herds was made up together. The number of factories, as we know them, would probably be about forty. There were also nineteen creameries, fourteen of which were started last spring. These creameries, with the exception of three or four, were conducted on the cream-gathering system, that being found the most feasible in that country where the settlement was so sparce and the distances so great. Owing to these difficulties dairying would not be extended very much, for some time at least. In the North-west Territories there were nine cheese factories and ten creameries. They were principally situated in the Alberta district, near the line, between Calgary and Edmonton. This seemed to be a very favorable country for dairying, but stock-raising was the chief industry in that part of the great North-west. In case some of the dairymen in the Province of Ontario might be afraid of this great country up in the north-west going into the dairying business, he wanted to say that the fifty-three factories in Manitoba turned out last year only 1,555,192 pounds of cheese. He could point out about three factories within fifteen or twenty miles of Woodstock which would make as much as that in the same time. In British Columbia the conditions were very different to those in the North-west. He used often to hear it said in Ontario that the British Columbia market was not a very critical one—that they would take a poorer article of butter than people would take in other parts of the world. He wanted to say that there was no part of Canada where the people were more able or willing to pay high prices for the best article There were two cheese factories and two creameries in that province. He was very glad to find that both the cheese-makers and the butter-makers were graduates of the Ontario Agricultural College Dairy School, and were doing excellent work, turning out good products. To those young men who might have a notion to go west he would say there was a good opening for a number of good cheese and butter-makers in Manitoba and the North-west during the coming season. Some difficulty was experienced last year in getting good men He had made cheese in

many parts of the country, and he had never in any place found the milk work so nice and be so free from all the troubles of which they had heard that morning as in Manitoba and the North-west. This was due to the air being dry and the nights cool. If there were any who would like to make cheese there for a season he had no doubt that by corresponding with the Superintendent of Dairying, Agricultural Department, Winnipeg, situations would be found for them.

ADDING TWO PER CENT. TO THE FAT TEST.

Prof. DEAN said: I come before you this morning to discuss a very important question in connection with cheese-making, and the method of dividing the proceeds among the patrons of cheese factories. It is one that has been discussed frequently at your conventions. It was warmly debated at Stratford last year, and I find that there is a general interest in the subject wherever there are cheese factories. It is not my intention this morning to dogmatize, or to set up theories, but to give you, as far as possible, the results of our experimental work in connection with this question. It is all right for men to theorize about certain things, but it is only after practical demonstration that we get the facts before us. So far as time will permit I intend to bring before you facts in connection with experimental work at the Agricultural College on this particular important question. There have been a good many theories set up in regard to the points that I shall discuss. There has been some experimental work done in connection with it, and I wish to say right here that I recognize that good work has been done by Mr. Ruddick, who is here this morning, and by others. Mr. Bell has done some experimental work in connection with this question, and last year at your convention I endeavored to bring before you the results of their work in connection with our own. I need not refer to that this morning. I shall confine my remarks to our own work. There are four general stages in cheese-making. There is first the constituents as we find them, in the soil and in the air. These constituents are taken from the soil and air by plants through the agency of water and sunshine. The cheese that we have here before us (pointing to six cheese on the table) have come out of the soil and out of the air and from the water reservoirs of the country. We may generally speaking, say that all cheese comes from the soil and air. That belongs to another branch of the subject that it is not my intention to dwell on. The second stage in the process of cheese-making is that of feeding the plants, which came from the soil and air, to the cow, and the change of these plants by the cow into milk. That in itself is a wide field. The question of the profitable change of plants by the cow into milk has already been discussed at your convention. The third general stage is the change of the milk into cheese. That is the part that I wish to speak of this morning. The fourth general stage in cheese-making is the getting of cheese from the factory to the consumer or the marketing of it. That itself forms a wide field for investigation. I shall ask several questions this morning. My topic is a question, and before I get through I shall ask a good many more questions, and endeavor to answer them—some of them perhaps to your satisfaction, some of them not to my own satisfaction. The first question that I shall ask is: What is the composition of milk? I have before me some milk that I got on the street this morning. I think it is good milk. I have brought this in for a special purpose, which I will explain to you a minute later. To show you the results of chemical analysis of the milks that we have been carrying on in our experimetal work, I will ask your attention very briefly to a chart We have been handling two classes of milk in our experimental work. We have been endeavoring to get milk with a high percentage of fat in it, and milk with a somewhat low percentage of fat, and to do this we have selected the cows in our own herd and other herds, which were giving a high percentage of fat, and the cows with a low percentage. We tested the cows every two weeks, putting the milk containing different percentages of fat by

itself. The rich milk we put in one vat and the low percentage milk in the other. The average composition of the milks containing a high percentage of fat as represented on this chart by the letter "H" is as follows: The average percentage of water in such milk was 87; the average percentage of fat, 4.1; the average percentage of casein was 2.5; the per cent. albumen, 8; average per cent. of sugar, ash, etc., 5.6—making a total of 100. This milk was carefully analyzed by our chemist at the College, and these are the results of the whole work for the past season. The milk with a low percentage of fat averaged as follows: water, 88.1; fat, 3 2; casein, 2.4; albumen, .7; sugar, etc., 5.6. You will notice that there are six chief substances in the milk. Now what part do these compounds play in the manufacture of cheese? We have been told that the fat represents the cheese-making value of the milk. Is that true? I propose to take that question up a little later on. I would direct your attention now to the part that these different compounds play. Can you make cheese without one of these? No, we cannot. Every one is necessary for good cheese. You cannot make good cheese without water in the milk. I mean the normal amount of water—not any extra. (Laughter.) We must have fat in the milk. We must have casein in the milk. We must have albumen, sugar and ash. Sugar is that part of the milk which has most to do with the fermentation. We talk about ripening milk, about ripening curds, what does that mean? Well, largely the change of the sugar of the milk into the acid, which we call lactic acid, There are other changes, but this is the principal one. Here is another point that I want to call special attention to: Why is it that we can sell our cheese in the English markets and in the Scotch markets for the prices that we are getting, leaving out the question of quality? Why can the English workingman, why can the Scotch workingman, buy cheese and eat them instead of meat? What is it in the cheese that enables the workingman to keep up his strength, to build up his muscles just as if he were to eat meat? We were told last night that one pound of cheese is equal to two and a quarter pounds of meat. Why? It is largely because of the casein that is in the cheese. If the workingman wants butter fat to keep himself warm he buys butter, but if he wants to build up his muscles, and a man who is working hard must eat something to build up his muscles, he takes cheese or lean meat or similar foods. What is there in the cheese that is not in the butter, except in small a quantity? It is the casein compound—the nitrogenous compound, or muscle forming compound, and therefore the most valuable compound in all food. I think that there is no man who has given any attention to this question who will deny that it is the muscle forming portion of the food that is the most expensive food that we buy. That is why the English workingman is able to work on cheese, whereas he cannot work on bread and butter. Why? Because the butter contains little or nothing of the casein or nitrogenous compound. I want you to remember that point. I raised the question a moment ago as to what part these compounds play in the manufacture of cheese. I have here a sample of milk and I have some rennet, and while I do not propose to make cheese I think I can illustrate it right here for the benefit of the city people who are perhaps not so well acquainted with the process of cheese-making. I take the substance called milk and I put in rennet, and that is one of the first steps in the process of cheese making. I have not measured the temperature, because I have not a thermometer here. In a very short time that should be thick. What effect did the adding of that rennet to the milk have? What parts of the milk does it act upon? It acts upon this compound called casein. It has little or nothing whatever to do with the other substances. Indirectly it acts upon the fat, but largely the effect of the rennet is on the casein. When we add the rennet we coagulate or curdle the casein of the milk, and then the casein takes the fat in its grasp and we get the curd, and after we go through the whole process of cheese making we get cheese. The first step is the action of the rennet upon the casein, and we could not make cheese at all unless we had the casein present for the rennet to act upon. What influences are necessary in the making of good cheese? First and most important of all is the skill and good judgment of the cheese-maker. We have had that discussed here this morning. I was very glad that Mr. Millar raised that point in reference to makers using good judgment, because in

every step in the process of cheese-making a man requires that his judgment shall come into play. Then again we must have good milk. What do we understand by that? We want good flavor, a certain percentage of fat and casein, milk that has all the qualities of what we call good milk. Then we need certain agents, such as rennet and salt. These are necessary. Then we need good utensils and good factories. Just as an illustration of the importance of good skill and judgment in the manufacture of cheese I have two cheese here made out of the same milk. All the difference in these two cheese is that one was put to press at a temperature of sixty-six degrees and the other at eighty degrees. Mr. McLaren and Mr. Ballantyne scored the cheese, and they both pronounced the former to be the better cheese. Yet they were made out of the same milk. But one experiment does not prove very much. It is simply an indication that it is possible we may be able to make better cheese by cooling our curds more before putting them to press. I have over here a couple of other cheese. This one was milled with two inches of acid on the curd. Here is one with one and a quarter inches. Mr. McLaren pronounced the latter to be the better cheese. I would like him to give the reason why one cheese is better than the other. There was no difference in the milk. It was worked the same right up to the milling stage, yet the experts tell us there is quite a difference in these cheese. The next question I shall ask you is this: Is the yield of cheese in proportion to the volume or weight of the milk? Under the old system that we have been working on of paying according to the weight or volume we have said that the yield of cheese is the same from all kinds of milk—that a hundred pounds of one kind of milk will make just as much cheese as one hundred pounds of another kind of milk. I want to bring that before you in two ways. The first of these two cheese to be seen on the front of this table was made out of three hundred pounds of milk, which tested 5.0 per cent of fat. It weighed on taking it out of the press thirty-five and three-quarter pounds. This one when taken out weighed twenty-eight and a half pounds, or a difference of seven and a quarter pounds. Three hundred pounds of milk was used in both cases. Is it true that equal volumes, equal amounts, of milk make the same quantity of cheese? Both curds were handled much the same except in cooking and salting. The rich milk curd was cooked to 100 degrees, taking two hours to do this, and was salted three and one-half pounds per 100 pounds of curd.

I have on a chart here the results of our two years' work on the yields of the milk from different percentages of fat. I am not going to bother you with all these figures. I am going to point out just one or two things. In the month of April the average percentage of fat was 4.21 in one lot of milk and 3.39 in the other. There were eighteen hundred pounds of milk in each lot. The one made 192½ pounds of cured cheese, the other 166¼, a difference of twenty-six and one-quarter pounds of cheese.

You will see the whole way through what a difference there is in the yield of cheese from equal quantities of milk, the only difference being in the percentage of fat. So in answer to the question, Is the yield of cheese in proportion to the weight or volume of the milk? I say emphatically "No." If you have a variation in the percentage of fat in the milk delivered at cheese factories you have a variation in the quantity of cheese made. The next question I shall ask you is this: Is the yield of cheese in proportion to the fat of the milk? It has been told us that the fat of the milk is a correct measure of its value for cheesemaking. Now there are two questions that come in there. First, Is the yield of cheese in proportion to the fat? and second: Will the richer milk make a better quality of cheese? I am going to answer the first question. I call your attention to the chart again. With regard to the fat in the month of April, 1895, the average percentage of fat in the milk of one lot was 4.21, and in the other 3.39. The pounds of cheese from one pound of fat were 2.54 and 2.72. Now notice all the way down the column in any month that you like, there is not an exception to that rule—the yield of cheese per pound of fat in the milk is always greater from the lower percentage of fat in the milk, and the yield of cheese is not in proportion to the fat. I do not care who gets up and says otherwise; I am fully convinced after two years' experience that the yield of cheese is not in proportion to the butter-fat of milk in Ontario. It may be so in other places, but it is not so in Ontario. The poorer milk always gives a greater yield of cheese in proportion to the fat

contained therein. Why is that true? I am going to speak of that later on. The next question I wish to ask you is this, Is the yield of cheese in proportion to the fat and the casein of the milk? These are the two compounds which are most concerned in the manufacture of cheese. I said a while ago, when I added the rennet to the milk, that the rennet acted on the casein directly and incorporated the fat, and these are the two things chiefly concerned in the manufacture of cheese. Our chemist has found that the percentage of casein in the milk remains fairly constant. You will find by looking over this column, from milk having a high percentage of fat and a low percentage of fat, that the percentage of casein is very nearly alike; 2.5 is the average percentage of casein in milk having a comparatively high percentage of fat, and 2.4 when the percentage of fat was comparatively low. To my mind the right basis upon which to work in the paying of patrons of cheese factories is to recognize both the butter fat and the casein. I think so chiefly for two reasons; first because the casein is the compound in the milk and the cheese which furnishes the muscle for the working man to work with, and second because the fat and the casein to a large extent determine the yield of cheese. There are other things that come in, such as the skill of the maker and the quality of the milk, but the fat and the casein for all practical purposes determine the value of the milk for cheese-making purposes. Is the yield of cheese in proportion to the fat and the casein? I say, for all practical purposes "Yes."

The next question is, Is the loss of fat and casein in the whey the same from milk with different percentages of fat? I will give you the composition of the whey as determined by our chemist:

	H. (rich milk.)	L. (poor milk.)	Average.
Water	93.19	93.36	93.27
Fat	.28	.20	.24
Casein	.13	12	12
Albumen	.86	.82	.84
Sugar, ash, etc	5.54	5.50	5.53
	100	100	100

So we find there is a slightly greater loss of fat and casein in the whey from the richer milk as compared with the poorer milk. This chart shows you the average percentage of fat by months as determined by the Babcock tester. In this other chart is shown the average percentage of fat by chemical analysis. In every case there was a slightly higher percentage of fat in the whey from the richer milk—for the month of April, .19 for H. milk and .16 per cent. of fat in whey from L., or poor milk, and so on all the way through. When we were handling the very rich milk we also found that more butter-fat pressed out of the cheese when they were pressed If you are handling rich milk it must be handled very carefully or there will be a great deal of loss in the whey. First in the whey, then in pressing, and then in the curing room. That is our experience. Of the total fat in the milk from a low percentage of fat, 5.8 per cent. was lost in the whey; from the rich milk 6.2 per cent. as determined by chemical analysis.

The next question that I shall ask you is this: Is the loss in weight of cheese by curing the same from the high and the low percentage of fat? I have figured out the average loss in the weight at the end of one month. The loss of weight from the rich milk cheese was 4.8 per cent; that is, out of every one hundred pounds of cheese we put into the curing room 4.8 pounds were lost in curing, largely by means of evaporation. Of the low percentage of fat the loss was 5.2. Now why is there that difference? I cannot tell you altogether, but I think I can offer an explanation. There is a cheese that weighs somewhere about twenty-six and a-half pounds, and there is another which weighs thirty-two and a-half pounds. There is a larger surface in proportion to the weight of the cheese in the one case than there is

in the other, and the larger the surface of the cheese in proportion to its weight the greater the evaporation. So I think the explanation of the fact that there is a greater loss from the poor milk cheese in curing as compared with the rich was in the larger surface, according to weight, which was exposed for evaporation. The next point that I wish to call your attention to is this: Does the composition of the milk affect the composition of the cheese? I have to refer to our chemist again to answer that question. If you follow this line right across on the chart you will find that the average percentage of water in this H. milk was 87 per cent.; in the cheese made from the rich milk there was 33 per cent. of water. The average percentage of water in the L. milk was 88.1; the percentage of water in the cheese was 34.1.

What about the fat in the milk? You will see from the chart that the higher percentage of fat in the milk gave a higher percentage of fat in the cured cheese—34.3 per-cent. as compared with 30.7. The casein seems to be more nearly alike Where the percentage of casein in the milk was 2.5 and 2.4 respectively, the percentage of casein in the cured cheese was 20.1 and 21.7, So we may say that the composition of the milk does affect the composition of the cheese. The cheese made from the lower percentage of fat in the milk has a slightly higher percentage of water, a lower percentage of fat, and a higher percentage of casein. These are the three things we are most concerned about. The next question is perhaps the most important of them all. Does the composition of the milk affect the quality of the cheese? In the time given to a speaker here I had much rather not discuss this point. I will give you my reasons. This question of the quality of cheese is a most difficult and delicate one. In the first place tastes differ. No two persons have the same taste. The cheese that suits one person does not suit another. Talking with an English importer last Tuesday in Toronto, he said they had at least nine distinct classes of persons to whom they had to cater. Some of their customers liked a firm cheese, and they tried to get it for them; others liked a moist fat cheese, and they tried to get that; some people liked cheese with no coloring in it; others with higher coloring; some liked cheese with a very mild flavor; others with a strong flavor. And so there are so many different tastes that it is a very difficult matter to say what determines the "quality" of a cheese. There is the first question which presents itself. Another thing: How are we to arrive at the quality of the cheese? If I were to ask Mr. Ballantyne or Mr. McLaren, or some of your other buyers to decide upon a scale of points we would likely have as many different scales as judges. It is difficult to get cheese buyers to agree on a scale of points for judging cheese. These are some of the difficulties that present themselves to us when we come to discuss the question of quality in cheese. What is quality? Is there any man here who can say that this kind of cheese will suit everybody in the world? There is no man bold enough. He would get into about the same kind of muddle as a man who would attempt to pick out a wife to suit every other man. We have to study this question of taste. We must come to some basis. What are we going to do? I have on this chart here a scale of points that I believe Mr. Ballantyne formulated for our dairy students It is slightly different from the scale used by Mr. McLaren in judging cheese at the World's Fair. The scale of points is: "Flavor," 35 out of every 100 points. Flavor is the most important thing. What is flavor? You can get the flavor largely when you pull out a plug from the cheese. But there are some flavors that you cannot get by smell, for instance a bitter flavor. I don't think you can get that by smell—you get it better by taste. We decide the flavor by the nose and the tongue. One of the most important requisites for a good dairyman is a good nose. A person who has not a good sense of smell can never make a success of cheese making or butter making, because we get the flavor of cheese and butter largely by the smell. As to what flavor is, and what it should not be, I leave that for Mr. McLaren or some of the expert judges. The next point is the "Closeness." We have allowed 20 points out of 100 for closeness. How do we determine it? We pull the plug out and see if it has any holes in it. You test that by its appearance. I do not just know what the objections are to an open cheese, but I believe the cheese that is open will not keep so well, nor is it so good in flavor as a rule. The next point in the scale is "Even color." Here is where the question of color comes in. Some people say

that we should have cheese with no coloring at all. Others like it highly colored. We have come to the conclusion that an even color is the best way to put it. We give fifteen points for that. The color is judged by the eye. The next is the "Texture." When an expert judges cheese he will probably take a piece of the cheese and work it between his thumb and finger and decide on its texture in that way. It should not be pasty nor hard. These are some of the chief points. For "Finish" we give ten points. What have been the results when we come to average them up? I have in this first column here the score for the cheese for 1894. There were forty-three experiments in that year.

Year.	No. experiments.	Av. p. c. fat.	Flavor.		Closeness.		Even color.		Texture.		Finish.	Total.	
			Possible score.	Points scored.	Possible score.	Points scored.	Possible score.	Points scored.	Possible score.	Points scored.	Points scored.	Possible score.	Points scored.
1894	43	3.94	1505	1350.5	860	761.0	645	591 0	860	720.0	430	4300	3852.5
		3.37	1505	1354.5	860	758.5	645	606.5	860	746 5	430	4300	3896.0
1895 mos)	72	3.98	2520	2147.5	1440	1289.0	1080	1009	1440	1249.5	720	7200	6415.5
		3.17	2520	2133.0	1440	1278.5	1080	1017	1440	1251.0	720	7200	6399.0

We have found that the tendency of the cheese made from the richer milk is to be slightly pasty. You makers know what a pasty cheese is. It is a cheese that sticks to your fingers—a very objectionable cheese. The tendency of the poorer milk, on the other hand, has been to be somewhat harsh in texture. Both are objectionable cheese. What we want is the medium. Take the total for six months of 1895. (I have left out September for this reason: One of our patrons, while I was away, broke his contract and fed brewers' grains; when I came home there was trouble in the camp. I went over to the farm, and I found that the man had received word from the College and that he had ceased feeding grains. But for two weeks afterwards the flavor was discernible in the cheese. There were no brewers' grains fed after September 12th. Two of the cheese on the table were made on the 25th of September, and they still have the flavor of brewers' grains. Some of the cheese were made out of the milk with brewers' grains and some not, and for that reason I have left out the month of September altogether, when we come to consider the quality, because I have thought it not fair to put in the score from these cheese). Taking the average of six months—April to October—the average percentage of fat was 3.98 in the one lot of milk and 3 17 in the other. Out of the total possible score of 7,200 points the rich milk scored 6,415 and the poor milk 6,399½ in 1895. In 1894 the score was 3,852.5 for rich milk cheese as compared with 3,896 out of a possible 4,300 for the poorer milk cheese. What percentage of fat should milk contain in order to make good Cheddar cheese? I should say that you need milk with about three and a half per cent of fat. If you get four per cent. milk and over, I don't think, so far as I can see at the present time, that it is advisable to make that class of milk into a Cheddar cheese, because there will be more loss of fat in the whey, and because there is a tendency to pastiness. Such milk can be more profitably made into butter. I give you that as my opinion.

What is the most correct system of dividing the proceeds amongst our patrons? This is perhaps the kernel of the whole thing. We have had three systems of paying. I have spoken of the wisdom and fairness of these. I consider that paying according to the butter-fat is much fairer than paying according to the volume of the milk. I have never said anything nor written anything against the Babcock tester. I believe the Babcock tester, properly handled, will give us the percentage of fat in each patron's milk, and that it would be better to divide on the basis of the butter-fat than on the weight of milk, but I believe there is another and better system. That is to take into consideration the butter-fat and the casein. We cannot determine this without chemical analysis, but our experiments go to prove that the percentage of casein in the milk is fairly constant. It remains about 2.4 or 2.5. How are we going to overcome this diffi-

culty of determining the casein? I have suggested the plan of adding two per cent. to the fat. Some say they cannot understand what difference that will make. I want to make that clear. Here is a man whose milk tests three per cent. of fat, and another whose test is four per cent. of fat. If we divide on the fat basis we give the first man three-sevenths and the other four-sevenths of the money to be divided. If we add two per cent. to the fat we make the first one five and the other six. We have now eleven parts to divide, of which the first receives five-elevenths and the second six-elevenths—a difference in the first case of one-seventh and in the second case of one-eleventh. That comes very nearly in accordance with the yield of cheese. I hold that this is the best system we know at present. It is more just than any other. Before commencing this experimental work I was prejudiced in favor of dividing on the fat basis, because up to that time the results of experiments seemed to point strongly in the direction of dividing on the fat basis only. But after two years' experience I have come to the conclusion that we should recognize the casein in the milk also when dividing the proceeds among the patrons of cheese factories. If we add two per cent. (which represents the casein) to the fat it will give very nearly justice to each man. It will perhaps take a little off the richer milk as compared with the fat basis only. It does that to some extent when we get over four per cent. of fat. It adds a little to the poorer milk (as compared with the fat basis), and it sort of strikes an average that to my mind comes nearer to the correct thing than anything that has been proposed. I would lay the matter before the patrons, and if they were satisfied to divide the proceeds according to the weight of the milk let them do it. If they want to divide the proceeds on the fat basis I would try to meet them. If they want the fat, plus two per cent., I would try and let them have that. I don't believe in forcing anything upon the patrons of any cheese factory. I think the matter should be laid plainly and clearly before them, and that they should have a voice in deciding this matter. I have tried to bring before you this morning the chief points in connection with the three systems, and to give you a brief outline of our work. I have no doubt that there are some points you do not understand and I shall be pleased to answer questions.

HOG BREEDING.

Mr. Theodore Louis again spoke on the hog. He said: I intend this morning to take up a part of the subject of breeding. I know it is one of the greatest sciences. You here in Canada have a future before you that we have not in the United States. Your Government assists you in a great many matters, whereas we can find no assistance in the matter of markets. When I listened to Professor Robertson last night, I found a weighty argument in your favor, that the Government is trying to find markets for you. Now, while the possibility lies before you that you can successfully compete in your dairy by-products with Denmark and other countries that put the finest of bacon and ham upon the English market, and while you have studied the dairy question and are still studying it to the highest perfection, the stranger who comes into your midst cannot help but admire the intelligence and energy with which you pursue these questions. It is right that you should experiment to the utmost in dairying. I have experimented to the utmost to study the life of the animal that I represent. I never go to Chicago but what I step into Armour's factory, and there one great lesson is brought before us—not a hair nor a drop of blood is lost that comes from the hog. Where you dairy farmers have a by-product so valuable for feeding hogs, it must necessarily be one of your great studies how to make the most out of that by-product. At Armour's factory, all the labor employed about the slaughter-house is paid for out of the by-products. Is it not possible for the dairy-farmer to pay his hired help and other farm expenses out of his by-product? But I want to talk about breeding this morning. You must be the selector of your breed of hogs. I believe that it is in the power of every breeder to formulate an animal by intelligent breeding that will answer his purpose. I believe if I

took my Poland-Chinas, and fed them on the more nitrogenous food that you are in possession of for a few generations, and adhered to the principle of pasturing, and gave them more range to run about, that I could formulate an animal that would answer equally as well the purpose of those animals which they have in Denmark, and that they boast so much of. I think this is one of the examples that lies before you, that you may breed an animal for years that will give you the best satisfaction. Then comes the science of feeding with it. In the States—I do not know how it is here—there is a tendency to breed from young sows, and every year the sow is changed. They object to the aged mother sow upon the farm, because there is a danger of her overlying her pigs. But the consequences of immature breeding are equally dangerous. When you follow a course of immature breeding from year to year, and make your selection always from your pigs to breed from, remember that you are pursuing a downward course in size, in constitution and in vigor. The animal must perfect herself before we can expect to have perfect offspring, and in the immature animal you will certainly never have this. You will have a deficiency in both size and strength after proceeding along that line for a few years. How shall we select a good sow? I said yesterday that a sow gives from twenty to thirty pounds of milk during twenty-four hours, and I know just what I am talking about, because I have tested it with the scales. If eleven pounds of milk give us one pound of growth in an animal of from seventy to one hundred pounds, it stands to reason that if my litter have gained three or four pounds in twenty-four hours, that the milk must have amounted to thirty or forty pounds. This, then, should be our selection—a good milking mother, one of a quiet disposition and of the build that we desire. I have here a chart taken from life at my advice. It is a young sow, but remember that she has all the qualifications of a good mother. She is broad in her forehead, she has her eyes prominent and wide apart, and she stands wide apart with her forelegs, and she was selected with the first cross. I select a sow for the same purpose as you do a cow. I want a good milker. If you adhere to this principle throughout your line of breeding, you will be astonished what a lot of good milking sows you will get, and remember that the good milking sow is always the good mother. Here we have the first cross. You see the improvement that has been made. The improvement is even made down to the hoofs, as the animal is securer upon its feet. It is a better build altogether. Here is the thermometer of the hog (pointing to the tail). One curl indicates good vigor and life; two curls are just about the best sign of health that I know of. (Laughter.) What kind of an animal should we refuse for breeding purposes? Always refuse an animal that has a drop back of the shoulder. Never choose for a sow or a sire those so affected, because it denotes a shortness of the ribs, and there is where the vitality of the animal lies. You must have an animal of great vitality in order that it shall be a profitable feeder. We want to select an animal that is deep through the chest, that is deep through the flank, and for the sow, I would not want one so closely built as I would have the sire. As a rule, every man selects his pig, or a great many do, when they are nursing. They say, "Oh, here is the prettiest pig of the lot; that is going to be my future sow." Never select a pig that way. Wait till the pigs have been weaned and have been fed on natural feed, and then take from the litter the animal that shows the greatest improvement, and that suits you best according to your judgment for your breeding purposes. Remember that a pig, after it has done nursing, may take on an entirely different conformation, and not suit you probably. If you have any questions to ask me, I shall be glad to answer them.

A MEMBER: What about blind staggers?

Mr. LOUIS: Blind staggers come from one of the great errors of feeding. It is not a hereditary disease in swine. When you and I eat too much we have a headache. There are men who feed swine regardless of their power of digestion and assimilation, and they gorge their animals with one kind of food. Suppose you feed your hogs on whey, and whey alone, and do not mix some oilmeal and shorts with the whey, you will probably find that you have blind staggers among your animals. When the digestive organs become so disturbed that constipation has taken place and digestion has ceased, inflammation of the brain sets in. Then the next step is blind staggers. The

hog has a severe pain in its forehead, and it commences to run around in a circle, and is almost blind. The only remedy I know of is to give the animal physic. Give it some common clearing medicine to remove the constipation, and then take a knife and split open the skin of its forehead right down to its nose, and put some salt and pepper in there in order to relieve the irritation of the brain.

A MEMBER: At what age should a young sow be bred?

Mr. LOUIS: A sow should not be bred until she is eight or nine months of age.

A MEMBER: What about the age of the sire?

Mr. LOUIS: He should not be used until about the same age and he should be retained upon the farm. I think that every farmer must become more or less a breeder to become successful. I would advise every farmer to hold his sows when they have satisfaction in one line. If you have a line of sows, hold yourselves to that same line and make your improvement by the sire. Never use your sire any younger than eight or nine months; never use him to excess.

A MEMBER: At what age would you put pigs into pasture? How long and what kind of pasture?

Mr. LOUIS: That is one of the greatest arts. As I said before, your pigs should have pasture. I do not know to what extent you have pasture for your hogs, but I could not think for one moment that my pigs should not enter upon pasture as soon as they are able to run with the sow. I want my pigs to run upon a clover pasture. You will also find barley mixed with winter rye a satisfactory pasture. You will have healthier and better hogs if they have pasture. We aim to let our hogs run in pasture in May when the clover has fair hold of the field, and when our hogs are once upon the pasture we feed twice a day.

A MEMBER: Do you ring your hogs?

Mr. LOUIS: No, we never ring our hogs. If you give them the condiment that I spoke of yesterday, namely, salt and charcoal, there is no need to ring them. A hog roots simply because there is a want of phosphate to make bone growth. The higher you feed the hog the more he will root. If a man is under obligation to ring his hogs it is best to put a ring on each side of the nose; never put a ring in the centre, because you will thus very often disturb the nerves that are connected with the eye and the brain. You will often notice that when you ring the nose right through your pigs will draw back from the trough. When our pigs are weaned (we let them nurse three months) we generally have in readiness two or three acres of peas. You can grow peas far superior to ours I know, because when I want a new kind I generally send here to get them, and I am always scared of getting the Canada thistle with them. (Laughter.) We sow as a rule upon our farm five acres of peas to feed our hogs on. Right in connection with your business I don't think you can do any better than this. I have movable fences upon my farm. If any of you gentlemen desire to get a pattern of them I shall be pleased to give you a drawing so that you can make them. (See page 171.) When our pigs are weaned—and we generally make it a point to breed our sows closely together, so that our pigs are nearly all of an age, as I said yesterday—we commence to cut the peas. I take a wheelbarrow and cut a few peas and place them on the feeding floor. Remember, you can never make a sudden change from one feed to another that will be accomplished with success. When you make a change of feed do it gradually. When I have fed the pigs nearly a week on the peas that I have cut I turn them onto about two acres just when the peas are ready for table use. If you have fed those pigs about eight days, you will be surprised how methodically they will go to work and commence to crop the peas and eat them. Here comes a time when you have very little trouble with your pigs. You have not got to do something for them three times a day. They are right there in the peas helping themselves. I give them some swill in the sties. Remember that peameal is often constipating. Whatever you do watch constipation in your hogs. I do not care whether you are feeding skim milk or peas, or anything, watch constipation. When the peas are nearly all harvested and the gleaning process commences, I have a piece of sweet corn

alongside that field, which I commence to cut and give them. Remember that when the gleaning process is on your pigs will fall away. They must not do that; they must continue to grow right up to the block.

A MEMBER: At what age would these pigs be that you speak of?

Mr. LOUIS: From about three months old I want to give a word of caution right here. If you have two fields of peas and the pigs have been gleaning in one of them for a week or two while you have fed them corn in addition, do not turn them at once into the other field where the peas are ripe. If you do you will certainly have one or two dead pigs. They will go at them so ravenously that they will swallow the peas whole.

A MEMBER: Do you breed your sows twice a year?

Mr. LOUIS: As a rule I do not; only exceptionally. It should never be a practice, especially if you are breeding from young sows, to breed twice. If she has gone through the strain of breeding and raising a litter she should not be exposed again; she should be allowed to perfect herself in growth. If we wish to breed two litters in one year we should take an old sow to do it.

A MEMBER: Did you ever have any trouble with sows killing their pigs?

Mr. LOUIS: I had in former years, in my infancy of swine breeding, but I never have now a days. If you feed your sows right there will be very little danger of her eating her pigs. If you have given her some roots every day and shorts during the winter you will never have any trouble in this direction. I have never known a sow that runs to pasture to eat her pigs. When they do it is simply owing to the feverish condition that you have put them in.

A MEMBER: Do you recommend the roots to be boiled?

Mr. LOUIS: If you have conveniences to boil them, yes; if not they are just as well fed raw.

A MEMBER: How do you feed your squash?

Mr. LOUIS: We feed them both raw and steamed. The advantage the squash has over the pumpkin is that if the pumpkin freezes it is worthless; but it is not so with the squash. We can put a great lot of squash, three or four loads, in a straw pile and use them along in December and January, In the winter time we steam them. We cut them up, put them in a barrel and steam them thoroughly. Then we mix our other food with them. We do not use the hard shell; we use the larger yellow variety of squash. Remember when you are feeding the animal, especially if you have fed him on grain or corn, that his teeth have become sore and it is better to cut the squash.

A MEMBER: How do you keep your squash during the winter?

Mr. LOUIS: We have a hole in the straw pile and put them right in there and cover the straw over them. We have no cellar to keep them in.

A MEMBER: If a sow has eaten one pig what will prevent her from eating the whole litter?

Mr. LOUIS: Take the pigs away and then give her a large piece of fat pork, as I told you yesterday, or some linseed oil.

A MEMBER: Have you any experience with black tooth, and is it connected with blind staggers?

Mr. LOUIS: No, they are not connected. When you are feeding a great deal of acidulated food it will often cause black tooth. The best way is to pick out the black tooth with a pair of pincers.

A MEMBER: What would you make charcoal out of if you had no corn cob?

Mr. LOUIS: Hard wood.

A MEMBER: What kind of wood would be best, maple or elm?

Mr. LOUIS: Maple would give you the best results.

A MEMBER: Do you approve of feeding oil cake to fatten hogs?

Mr. LOUIS: I approve of feeding ground oil cake under all and every condition. There is nothing that gives me so much satisfaction as that a portion of my hogs' ration shall be oil cake.

A MEMBER: Do you approve of much straw in the pens for breeding purposes?

Mr. LOUIS: Yes. Here is my practise. A fortnight before a sow farrows I put her into the pen, and I feed her there mornings and nights, but I let her go along with the rest of the sows, so that she does not become scared. I do this up to within three days of farrowing, and I then confine her in the stall all the time. A sow carries her young 112 days—116 days at the outside. The sow knows that she has been treated well in that stall, and that there is no danger about it; and remember that the sow always looks out a secure place in which to farrow. The second day after I have confined her I give her plenty of bedding and let her make her own nest. Of course you may have too much bedding. You will have to use your own judgment about that.

PORTABLE HURDLE FENCE.

Figures 1 and 2 represent the movable hurdle fence used on the farm of Theodore Louis, Wisconsin, who has kindly furnished these diagrams for this report. It is used for hurdling swine, but would be equally valuable for sheep and cattle. The width be-

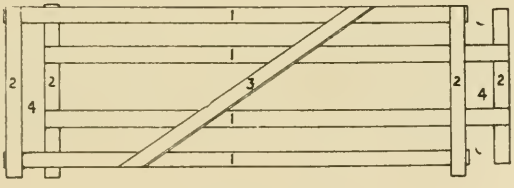


FIG. I.

tween the bars and height of the hurdles may be made to suit the sort of animals to be kept by it: (1) Fence board twelve feet long; (2) one by three or four inch slats; (3) two-inch slats. Observe that slat (2) is reversed at every other panel.

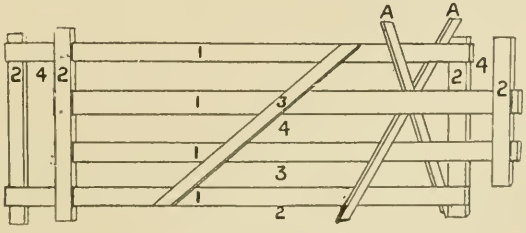


FIG. II.

(4) This open space must be one inch wider than slat (No. 2). The fence stands worm or zigzag fashion; the right-hand end of Fig. 1 protruding through the left-hand end of Fig. 2, and so on throughout the whole fence. A A represent stakes driven, as shown in Fig. 2, to hold the fence firm.

The convention then adjourned until the afternoon.

THIRD DAY—AFTERNOON SESSION.

The PRESIDENT: I am glad to see, on this the closing afternoon, so many still in attendance. I am sure you will be rewarded for being here, because a good deal of the work this afternoon will be of an interesting character. The first thing upon the programme is the Auditors' report. I will ask the Secretary to read it. I am glad to be able to announce to you that the funds of the Association are in a satisfactory condition. We have a considerable surplus on hand—better than we had last year. The Board have endeavored to make every dollar go as far as possible, and consequently we were glad to hear Mr. Dryden say that they were pleased with the way in which our funds are spent, and that they hold us up as a model Association. I had a telegram this afternoon from the Eastern Dairymen's Association in reply to the message we wired them. It reads as follows: "Thanks for your kindly greeting, which is reciprocated here. This is the first session of our convention, and it is a great success. Over 300 farmers present. Edward Kidd, president." If our good friend Mr. Kidd could have dropped in here yesterday and seen some thousand persons in this opera house he would have been convinced that they had scarcely realized our wishes that their convention would be as successful as ours.

REPORT OF THE TREASURER.

Mr. WHEATON then read the annual report of the Treasurer, which will be found in the appendix. The report was carried unanimously.

The PRESIDENT: We now come to the report of the Committee on Resolutions. These resolutions are presented with the approval of the members of the Committee, and they are moved by gentlemen who have put their names to them and requested that I should read them from the chair, instead of having them read in the body of the hall. I will give any of these gentlemen, or any of you, the privilege of speaking to any of these resolutions. If there is anything in any of them that you object to, get up and say so. We want perfectly free discussion. We do not want to pass anything here that does not voice the sentiments of this Association.

A VOTE OF THANKS.

Moved by A. F. MCLAREN, and seconded by A. T. BELL, That the members of the Dairymen's Assoeiation of Western Ontario desire hereby to thank the citizens of Woodstock for the cordial welcome and hospitality extended to them during this Convention, and that the secretary of this Association is requested to formally thank the Mayor and members of the Town Council for generously providing this splendid audience room for the meetings of the convention free of cost; and also the President and members of the Woodstock Board of Trade for the banquet which is to be given in honor of this Association this evening, and for their efforts to make this convention the magnificent success which it has proved.—Carried.

FAVORING THE USE OF THE BABCOCK TESTER.

Moved by R. M. BALLANTYNE, seconded by P. DOWNHAM, That we hereby express the opiuion of the Dairymen's Association of Western Ontario in favor of the system of paying for milk according to quality, and our belief that the Babcock tester affords a just and honest test of quality. We urge its universal use throughout the factories of this district, believing that it will promote both honesty and improvement among patrons and enhance the quality of our cheese. In the interests of honesty, justice and high quality, we ask the directors and officers of this Association to continue their efforts to secure the use of the Babcock tester and payment for milk according to quality at every factory in this western district."—Carried.

CONDEMNING THE RETURNING OF WHEY IN MILK CANS.

Moved by J. A. GRAY, of Elma, seconded by GEO. MACDONALD, of Bluevale, That we, the members of the Western Dairymen's Association in convention assembled, hereby endorse the views expressed by our Directors for 1895, in their annual report, on the subject of carrying whey in the milk cans; and we further pledge ourselves to go back to our various factories and to use our utmost efforts to influence our fellow patrons and factory directors to put a stop to a practice which is dangerous to the interests of the cheese industry, and which prevents the uniform improvement towards a high standard of quality which it is the aim of these conventions and the work of this Association to promote. We hereby ask the Directors and officers of this Association to assist us and to co-operate with local boards of factory directors in an effort to secure concerted action to do away with a system which has produced baneful results in the past and still stands in the way of improvement.—Carried.

INSTRUCTION AND INSPECTION.

Moved by D. A. DEMPSEY, seconded by GEO. HATELY, That we, the members of the Western Dairymen's Association and the dairymen of this district in convention assembled, cordially endorse the recommendation of the directors for the past year in favor of increased inspection—that is, increased instruction among the factories through co-operative effort; and we pledge our support to the directors of the present year in such steps as they may see fit to take in order to carry out such a policy. In view of the way in which inspection and instruction are now carried on in Quebec, Eastern Ontario and elsewhere, we urgently suggest to the directors of all the cheese factories in this district the necessity of co-operating with this Association to secure more satisfactory and general instruction and efficient co-operation in order to bring about uniformity in the quality of "Ingersoll Cheese."

Mr. BUTCHERT: What are the duties that the Directors have laid down for the inspectors?

The PRESIDENT: The object of the Directors is to induce factories to co-operate with them in order that the whole of this western district may be evenly divided into groups in which special instruction shall be given by inspectors who will be appointed. In other words to be able to overtake the work throughout the whole western district by having men going about giving special instructions in a similar way to what Mr. Millar does in the early part of the season. The idea is that he has not been able to overtake all the work. The directors cannot do that with the present funds and they ask for concerted action. In the province of Quebec the local government gives them a special grant towards this work of inspection of factories and grouping together so that the cheese of the whole district can be brought up to one uniform standard. This is the hope and object of the Directors. I may say that I have no hope that the Directors will be able to carry it out until it is taken up by concerted action on the part of the factories. Perhaps the passing of this resolution will do good, both in the way of public opinion and active public effort.

The resolution was then carried unanimously.

The PRESIDENT: Of course you will observe that these resolutions do not bind you in a formal way, but what is felt is that when the members of this Association and of the dairy interests represented here pass resolutions they are not meaningless, and that you will go back and try and influence those who are not here to carry out the suggestions here laid down.

SELLING CHEESE ON THE CALL BOARD.

Moved by JAMES HARLEY, seconded by JOHN PPAIN, That the members of this Association, after hearing the discussion of the present condition of our cheese markets, and the various suggestions made as to how it can be improved, are of the opinion that the easiest and most feasible plan to bring about a reform and thus to promote the interests of the producer, would be for the salesmen on each market to agree to sell their cheese on the Call Board, and not to sell them off the Board. And we hereby request the Board of Directors for the present year to make an effort to bring about an agreement to this effect on the various markets, and to co-operate with the management of these markets in order to secure the more vigilant enforcement of the rules of these local market boards, especially in reference to the sale and bargaining for the sale of cheese after the Call is over.

The PRESIDENT: This is a question regarding which we shall be glad to hear from the mover and seconder or any gentleman in this hall.

Mr. BUTCHERT: What are the advantages to be gained in selling the cheese on the call board over that of private sales?

The PRESIDENT: That was exactly the question discussed on Tuesday. I will not give you my opinion now, because I do not want to take up your time. What these gentlemen on Tuesday pointed out was that if the salesmen would agree to sell their cheese on the call board only, there would be higher prices paid; that the reason the buyers did not bid at all very often was because they knew before the market started that the salesmen were not going to sell. You know that that is the case at most of our markets. Before the bidding begins the buyers have absolute knowledge almost that the salesmen are not going to sell that day at such prices as they think are going to be current. It has

occurred over and over again that the buyers will not bid at the call board, for that reason, what they would bid if they knew that you were going to sell. Consequently they discourage the call system altogether, knowing that afterwards they can buy the cheese privately, and very often better than they would have done if they had bid against each other on the call board.

Mr. BUTCHERT: You think the call board system then is in favor of the sellers and patrons of the cheese factories?

The PRESIDENT: As the result of the observation of years I am perfectly satisfied that the call board system is in favor of the salesmen and producer, and against the buyers. If this is not your belief vote the resolution down.

Mr. BUTCHERT: I am now at the point where I want to get all I can for the cheese I manufacture. Of course the other people are looking after their interests. If the call system is going to be a help to the cheese industry and get better prices for the cheese, then I think the sellers should be backed up by the patrons. If it is going to be a detriment to the patrons of the factory the patrons ought to know, and then caution their salesmen against it. This resolution should be perfectly understood, because our salesmen might want to know the feelings of the patrons before they do this. I would like to hear this talked over a little.

Mr. EAGLE: This last year I sold, I believe, about 9,000 boxes of cheese, so I should know what I am talking about. I have sold them on Brantford market and sold them on every market day. I sold them on the call system. If the gentleman would try, as I have done, the call system he would be satisfied that it is the best. There is a good deal less trouble selling cheese that way than any other, and after a man has adopted this system for one or two years he does not want to drop it. If there were two men on each board at Woodstock, Ingersoll, London, Listowel that would adopt the system of selling every market day, in three years, time they would be getting more money, taking average sales. I sold on Brantford board to Cook, of Ingersoll, and three consecutive times, immediately after I had sold, there was a slump of half a cent. Of course, sometimes there is a rise, but if I miss one week I will average it up on the next. Speaking for myself and members of the Brantford board we are strongly in favor of the call system, believing that there is more money in it for the salesmen and that it is better for the buyer.

Mr. GEO. HATELY then made a few remarks along the line of his paper, which, in his absence on the first day, was read by the Secretary.

The PRESIDENT: It might be asked—and I just mention it to bring out ideas—why, if the call board favors the seller, some of the buyers should also advocate the system? My own belief is that if these buyers were to come and tell us all that is in their minds they would prefer that the call board system should be done away with. But there are some reasons that make them desire to see it a success. I have seen buyers come to this market over and over again when they actually had orders for cheese and were willing to pay higher prices than the English market warranted, and yet they could not get a pound of cheese, because the salesmen were in mortal terror that they were not going to get the market price, and then perhaps at the next market they were ready to sell and the buyers did not want the stuff. Speaking of this question, as an observer, I want to say that my sympathies are entirely with the salesmen and producer, and I would not give my opinion away for the opinion of anybody in the trade. On this matter—a matter which I have studied and observed from an independent standpoint—I hold very strong opinions, and I speak with emphasis upon this subject. The buyer's time is worth a good deal of money. As one gentleman said on Tuesday, some of these buyers spend a lot of money, and they have to. They waste a perfect gold mine of time. Whose pocket does it come out of? In the end it comes out of the producer. There is not any doubt about that. If you could facilitate the business so that these buyers could save time, and thus lessen the expense, that would press prices a cent higher. Looking at this question from any standpoint you like it is in the interests of the salesmen to put their cheese on the board and sell them, and not off the board.

Mr. HARLEY, as the mover of the resolution, thought it was important that it should be passed and acted upon. The call system had worked well for a time, but it had fallen into disrepute, possibly through the fault of the salesmen, but the buyers were not guiltless. The conditions of the call system were that they should sell their cheese the day of the market on the board, and that if not sold on the board they should not sell them that day, neither negotiote for their purchase. But it had frequently occurred that buyers would, the day after the market, raise the price a little and purchase the cheese of the salesmen who were at the market, and the consequence had been that salesmen had got into the habit of holding their cheese. Very little of the cheese around Woodstock had been sold on the market the past season; it had mostly been disposed of at the factories the next day. This was certainly going to ruin the markets. Yet the markets were a necessity. He thought salesmen should make it a rule to sell on the market and nowhere else. This would have the tendency to raise the standard of quality, because the buyers would offer higher prices for the better makes. If the factory that he represented did not make as good cheese as Strathallan or Bright it should suffer the consequences by taking a less price. The buyers, he believed, were gentlemen who acted honestly and uprightly, and when they went on the market they would bid whatever the make was worth.

Mr. PRAIN (Harriston), said he had been one of those to agitate for the call system, but latterly he had found that owing to the hole-and-corner methods that were being pursued, it was not satisfactory, and he had sold most of his cheese at home. He remembered on one occasion he sold a lot of cheese on the board for eight cents. It was the only lot sold on the board, and the next day he found the buyers paying eight and one-quarter cents for the cheese of his neighbors. He condemned the hole and corner business altogether.

Mr. E. H. GREEN thought that if the salesmen would make it a rule to sell on the board, and on the board alone, it would be better for the patrons and the salesmen and all parties concerned.

The resolution, on being put, was carried unanimously.

BRANDING CHEESE.

Moved by Mr. T. BALLANTYNE, and seconded by Mr. HATELY, That this Convention of Dairymen assembled in the Town of Woodstock would strongly recommend that such regulations be adopted, and such laws be enacted as will compel our cheese factories to brand on each cheese the date and month upon which the cheese was made, and also the word "Canadian," but that no registered number for each factory be put upon the cheese, as we think it would result in complications and difficulties and be an injury to the cheese trade of Canada.

The PRESIDENT: That brings up the vexed question of branding. I will ask Mr. Ballantyne to speak on it.

Mr. BALLANTYNE said that thirty years ago it used to be the practice to brand every cheese with the month and the day of manufacture, but it had got into disuse. It was necessary, almost absolutely necessary, that the day and the month should be on the cheese. It was of the utmost importance that their customers in England, on whom they were dependent, should feel that they were being honorably dealt with. He had heard of no reason in favor of not branding them except that they were able to sell one month's cheese as something else. But the maker gained nothing by that for he sold them to the dealer for what they really were. He had been in the business for many years, and he had never sold an October cheese for a September, and he wanted the English customers to know that they were dealing with honorable people. He would not favor branding the cheese with anything but the date of manufacture and the word "Canada," but those words should be put on the cheese in the press, and

then it would be impossible to erase them. But if it was to be done at all they wanted the law to enforce it. The dairy Commissioner had advocated a registered number. The resolution before them disapproved of that, and he thought there was not a cheese-maker present but would agree with that part of the resolution. If the make of the factories were all the same, if the quality of the cheese at each factory were the same from the commencement of the season to the end of the season, there would be no difficulty. But every cheese maker knew that it was the very opposite. At one time a factory might have very fine cheese, and at another very poor. They might have the best makers, and yet have a percentage of poor cheese from causes over which the makers had no control. Supposing one of the poor specimens got into the hands of a dealer. He would make a memorandum of the registered number and refuse to buy any more of that factory's output. As it was, even with the private marks that were used by exporters, the English dealers would sometimes write and ask not to buy any more of a certain mark. He knew several factories this year that usually turned out the very best whose make had shown, through causes over which they had no control, very bad flavor. Had these cheese been branded with a number the English importers would have refused to take any more from those factories. There was nothing to be gained by a registered number, but there was everything to be gained by establishing confidence in the minds of their customers. They wanted the the word "Canada" branded to show that the cheese were not adulterated. As an instance of the necessity of confidence, he pointed out that there was a time when New York State cheese was selling one and a half cents above Canadian cheese, but they commenced to adulterate, the importer lost confidence in American cheese and the result was that, although there was as good cheese being made in the United States as here, Canadian cheese stood higher on the market than American cheese.

Mr. Green: I would like to ask Mr. Ballantyne if it is not a fact that there is an unwarranted prejudice in the Old Country against the make of certain months of the year?

Mr. Ballantyne: The time was when there was a strong prejudice in favor of June in preference to July, but there is none of that to-day, as we know July cheese are better than June cheese.

The resolution was carried unanimously.

IN MEMORIAM.

Moved by Thos. Ballantyne and seconded by Jno. S. Pearce, That the members of the Dairymen's Association of Western Ontario in convention assembled at Woodstock, having learned of the recent death of J. B. Harris, Esq., Antwerp, N.Y., would express their sincere regret at the loss of one who formerly rendered valuable services to the cheese industry of this district when acting as travelling instructor for this Association, and would tender to the relatives and friends of the deceased their sincere sympathy in their loss, and that a copy of this resolution be forwarded by the Secretary to the bereaved family.—Carried.

REPORT OF COMMITTEE ON DAIRY UTENSILS.

The following report of the Committee on Dairy Utensils was then read by Inspector Millar and adopted:

We, your Committee on Dairy Utensils, find on exhibition one pair of curd knives, manufactured by J. F. Wamsley, Woodstock. They are well made and finished nicely. Also an engine curd mill and a gang press by Whitelaw, of Woodstock; a gang press by Richardson & Webster, St. Marys; gang press hoops by O. H. Slawson & Co., Ingersoll; and two samples of Windsor dairy salt. We take pleasure in recommending the above to cheese-makers and proprietors of factories.

All of which is respectfully submitted.

T. B. Millar,
J. F. Williams.

REPORT OF THE NOMINATING COMMITTEE.

The report of the Nominating Committee was read and adopted. The list of officers will be found on page 74. The report also contained the following tribute to a veteran dairyman: "Your Committee believing that the Western Ontario Dairymen's Association has been brought to its present prosperous and useful position very largely through the efforts of one who has devoted the best energies of a long life to the development of the dairy industry of Canada; therefore in partial recognition of the excellent service rendered the dairy interests of Western Ontario, we respectfully beg to recommend that the Hon. Thos. Ballantyne be elected to the office of Honorary President of this Association."

The PRESIDENT: I would like to say in regard to the members of the Board last year that there never was a more faithful Board elected in the history of this Association. All I hope is that the Board of this year will be as faithful and able in the discharge of its duties as the gentlemen who were associated with me last year. I would like to make just one personal reference. When I announced that I would not be President of this Association another year, or rather a candidate for the position, I knew very well who would be my successor.

He then proceeded to pay a high compliment to Mr. McLaren and introduced him to the gathering as its future presiding officer.

Mr. MCLAREN then took the chair amid applause. He said: I thank you very heartily for the high honor you have conferred upon me by placing me at the head of this Association. I appreciate it all the more highly because I am placed in this position in the grand old banner cheese county of Oxford. As you all know I have milked the cow, made cheese, boxed cheese, shipped cheese, bought cheese.

A MEMBER: And judged cheese.

Mr. MCLAREN: I can assure you I appreciate the honor very much. I hope that at the end of my term I shall be able to give a good account of my stewardship. Anyway I shall have tried to do my best. (Applause.)

WINTER BUTTER MAKING.

Mr. J. A. RUDDICK then delivered a short address on "Winter Butter Making." He said that when he was asked to say a few words on the subject of winter butter making it struck him that it was something like carrying coal to Newcastle to speak on that subject in Woodstock, because they all knew it was here that, some four years ago, the first winter creamery in Canada was put into operation. Something had, of course, been done before that, in a private way, in making butter in the winter time, but that was really the first start that was made in reference to winter butter making as they understood it at the present time. Considerable progress had been made, and from what was looked upon as an experiment they had now a big business. In the fall of 1891 there was a great deal of doubt in the minds of many people as to what the outcome would be. However, the experience of the past three or four years went to show that they could at least make an article of butter in the winter which would be superior to the summer butter that had been made before that time. While they had some disadvantages to contend with in the winter time the summer maker had some disadvantages to contend with also, and there were some things, principally that of temperature, which were more favorable in the winter time than in the summer. They were able now to make better butter in the winter than they were at first. The milk was better cared for. As years went by there was more of the fresh milk brought into

the creameries in the winter and a very much superior article of butter had resulted from that cause alone. Some had looked upon it as an encroachment upon the business of cheese-making, and had feared that it was opposed to the interests of cheese-makers. He failed to see any truth in that argument. As a practical maker he believed that the cheese-makers derived considerable benefit at the factories where butter was made in the winter time. Winter butter making led to a more uniform quality in the milk. The cows, in order to produce milk in the winter time, were fed better, and thus the cheese makers were able to make better cheese earlier in the year than they could formerly. Then again they were able to make butter at that time of year when it was hard to make a decent cheese. This winter he had had charge of the Dairy School at Kingston. They were running a butter factory alongside the cheese factory for two months, and they had found that they could make better butter, comparatively speaking, than they could make cheese in the winter months. He did not intend to go into the details of making butter; it would take up too much time; but there was just one idea in the matter of organization that he thought might be useful. He had felt for some time that the best way in which this winter butter making might be carried on in a great many places was by establishing independent creameries for the winter. He happened to know of one that was being operated on these lines this winter. It was in eastern Ontario, at a place near Brockville—a place where dairying was carried on very extensively. There were two large cheese factories within gunshot of each other. He was very glad to say that the patrons of these two factories, who had been opposed to each other for many years, had come together and organized themselves into a company to make butter in the winter time, bringing the milk to one building equipped with special appliances. The butter business was run entirely independent of the cheese business. In that way they overcame considerable trouble in the matter of local jealousies. In a great many sections butter making apparatus had been put into cheese factories simply for the purpose of holding the patrons, and when only a small amount of butter was made it came very expensive. By combining, the cost of production was cheapened. No better place for the establishment of a winter creamery could be found than right in the centre of some of the large towns in Western Ontario. When the Dairy School was started in the centre of the city of Kingston, it was thought a queer place to put a factory—a queer place to receive the milk. Well they are receiving now between 25,000 and 30,000 pounds a week. That was as much as they required. The milk was brought in from long distances, but the farmers had to come into town any way, and they did not mind the trip at all. It is a fact that if the school had been situated two or three miles out of the city they could not have got one quarter of the milk that they do now. He believed that the plan adopted at first, and followed out in many instances, of making butter in the cheese-making room, was a very good one at the start. It enabled the directors or managers to introduce butter making where, if they had to put up a separate building, it would have been difficult to get the matter under way; but where it was possible he thought it was much better to have a separate room for the butter making. It saved a great deal of labor in the spring and fall of shifting the apparatus, and there was a temporary arrangement in a place of that kind that prevented proper making. He thought it would pay in most cases to have a separate room for making butter in the winter time. It should be warm. A great many of the factories, especially the older ones, would not be warm enough for winter butter making—they were so cold it was impossible to keep the appliances dry and the machinery was ruined more or less, on account of the moisture. It was often easier to put up a small room than it was to fit up the cheese making room and keep it warm. Rubber belting was much better than leather belting where there was much moisture, and it cost less.

Mr. Ballantyne, on being called on, said they must not believe that if they went into winter dairying on an extensive scale they were going to get the high and remunerative prices that they once got. The conditions had changed. As long as the supply was not in excess of the demand they get remunerative prices, but the moment there was a surplus, prices were cut down. They must not forget that the drought in Australia and

New Zealand, and the diminished shipments from this country, were possibly largely the cause of the higher prices to-day in England than they were last year. If there had been the usual make in Australia he would not pretend to say what the prices would have been. The Dairy Commissioner had bought butter at twenty cents a pound, and the gentleman at the head of the Agricultural Department had said that they had made a profit. Such a thing was impossible, no matter what the quality was. He pointed out that a great deal of the winter butter would be arriving in England when butter was going in at the very lowest prices. If they were going into winter dairying they must discontinue feeding turnips entirely. Mangels did not affect the quality of the milk, and they could be raised just as easily as turnips. In everything they did they should bear it clearly in mind to do the best they could. They should not think of making money; if they did their best the money would make itself. He did not boast of being wealthy, and he was not, but if he had been at all successful in connection with the cheese factory business it had been through following that rule—never asking whether it would pay or not pay. He hoped every farmer would do everything to deliver the milk at the factory in the best possible condition. They wanted to be particular with cheese, but it was twice as necessary in the case of butter. In England they would not take inferior butter at any price; they preferred the margarine mixture. Regarding packages, the old tubs were not in demand; they looked too much like lard. The best package in which to ship was a box to hold fifty-six pounds, soaked in brine and lined with parchment paper, also soaked in brine. The two best markets were Manchester and London. Manchester wanted no color. They would take it as pale as it could be got. No market in England wanted the color that the Canadian trade required. In conclusion, he said he was aware everyone was taking to winter dairying, but they must not think they were going to get the prices that used to be paid.

DAIRY FARMING UP TO DATE.

Dr. MILLS, of the Ontario Agricultural College, was asked to say a few words. He was glad to have an opportunity to say a word or two to this very large and interesting convention, representing so important an industry in our Province. The conditions were changed he was sorry to say; prices were down and, he was afraid, likely to stay down. He did not know what Mr. Ballantyne would be able to do for them but he was afraid they would not have so high prices as they had in the past because all the world seemed to be anxiously laboring to produce more cheese and more butter—better cheese and better butter. He did not think they could expect to have the prices that they had had for years past in this Province. The question was "How shall we meet the changed conditions?" He supposed they were all thinking over that very question, and it was not for a man like him to make suggestions, but it appeared to him that one of the most important means of meeting these changed conditions was by keeping better cows. He did not know whether they had the best cows it was possible to get in the County of Oxford, but there was certainly room for a change in many parts of the Province. He did not mean change of breed. He did not think it made so much difference about the breed; it was the care with which they culled them and the persistency and the care with which they fed them from year to year that was so important. They knew there was a vast amount of time and money and opportunity wasted in this Province in having beef cattle for the production of milk. It came to this: If they were going to keep better cows they must get some means of keeping a record of what their cows were doing. All prominent dairymen ought to get a small Babcock tester and learn how to use it. A great many farmers did not know how much their cows were giving; they could test the quantity but they could not test the quality. The dairymen must test the milk in order that that they might be induced to dispose of those beef cattle that they were taking care of from year to year for the production of milk. In the second place they must have better provision for the feeding of

their cows. They knew all that had been said about the necessity of making some suitable arrangement for feeding their cows in July and August. They had been trying at Guelph a great many experiments to see what mixture would give the best result. Their experimenter so far had found that the best mixture to come in between the clover and the corn was pease and oats. Thirdly, the farmers must send their boys and girls to one of the dairy schools. They had a central Dairy School at Guelph, an eastern one at Kingston, and a western one at Strathroy. The Government had made ample provision for instruction in everything pertaining to the handling of milk, the making of butter and cheese and there was every opportunity for young men and young women to learn all there was to be learned about these subjects. The time of year when these schools were running was just the time when farmers could best spare their boys and girls. At Guelph they gave long courses, at Kingston short courses, and they were going to give short ones at Strathroy. The charges did not amount to anything. Fourthly, if they were going to succeed they must pay close attention to business. Was it necessary to say anything to farmers under that head? He ventured to say it was. He would not say so if he did not know something about farmers. Competitition was now, as they knew, very keen, and no one had any chance of success unless by the closest attention to business. He would say to the young farmers especially, who spend much time about the corners or in villages loitering around, that they need not possibly expect to succeed. He had been greatly struck by the accuracy and thoroughness of Mr. Louis' knowledge about pigs, and he held that gentleman up as an example. The successful men in every profession or trade were attending to their business morning, noon and night, and unless the farmers did the same they never would be succassful.

On the motion of Mr. Pearce, seconded by Mr. Eagle, a resolution thanking Mr. Andrew Pattullo for his able services as President for two years was unanimously carried.

Mr. MacLaren remarked that the Association had never had during the twenty years of its existence a more able President.

Mr. Pattullo responded in a neatly worded brief speech.

The Convention then adjourned.

THE BANQUET.

The delegates to the Convention were tendered a banquet in the Opera House by the Woodstock Board of Trade. President McIntosh, of that body, occupied the chair, and Sir Oliver Mowat and several hundred citizens and cheese-men were in attendance. The banquet was one of the most successful that has been held.

CREAMERIES' ASSOCIATION OF ONTARIO

OFFICERS FOR 1896.

President	D. Derbyshire, Brockville.
1st Vice-President	Wm. Halliday, Chesley.
2nd Vice-President	Thomas J. Millar, Spencerville.
Secretary	Mark Sprague, Ameliasburg.
Treasurer	R. J. Graham, Belleville.

Directors:

Division No. 1	J. H. Croil, Aultsville.
Division No. 2	A. Campbell, Ormond.
Division No. 3	Chas. Johnson, Athens.
Division No. 4	John Sprague, Ameliasburg.
Division No. 5	A. A. Wright, Renfrew.
Division No. 6	F. L. Green, Greenwood.
Division No. 7	John S. Pearce, London.
Division No. 8	W. G. Walton, Hamilton.
Division No. 9	A. Q. Robier, Exeter;
Division No. 10	A. Wenger, Ayton.
Division No. 11	James Struthers, Owen Sound.
Division No. 12	James Carmichael, Arva.
Division No. 13	John Zinkann, Wellesley.

Auditors	A. F. Meacham, Cornwall. R. G. Murphy, Elgin.

ELEVENTH ANNUAL MEETING

OF THE

CREAMERIES' ASSOCIATION OF ONTARIO.

FIRST DAY—MORNING SESSION.

The eleventh annual convention of the Creameries' Association of Ontario opened in the Music Hall, Cornwall, on the forenoon of January 14th, 1896.

Mr. A. F. Mulhern, the Mayor of Cornwall, having been called to the chair, Mr. D. Derbyshire, of Brockville, President of the Association, delivered the following address :

PRESIDENT'S ADDRESS.

It is with satisfaction that I now open the eleventh annual convention of this Association in this grand old town of Cornwall, so beautifully situated on the banks of the ever famous St. Lawrence. As the chief town in these eastern counties, you have exerted a wide influence as a manufacturing centre. Your schools and churches are all that could be desired, your business men energetic, and I feel sure that a grand future is assured to your good town and its people. I thank you, sir, on behalf of this Association, for your generous reception. Your press and citizens have acted nobly, and I am sure we will have a very useful meeting.

Dairying still continues to be the most important industry in our country, and while the prices realized this season have not been as high as last, still we have received $300,000 more from creamery butter. The butter trade has furnished a certain amount of encouragement—in fact it has more than doubled its dimensions this season. And the best of all is we have greatly improved the quality of our Canadian creamery butter ; and while our shipments to the Mother Country have more than doubled this last season, our home consumption has more than doubled also. I feel particularly proud of this, as the work of this Association has been specially directed in educating our own people, as well as our friends abroad, as to the excellent quality of our Canadian creamery butter. It is perfectly wonderful how fast our own people are being educated to a knowledge of what fancy goods really are, and we will continue to persevere with better methods, better apparatus, better educated butter-makers and better milk producers, until every consumer, both at home and abroad, will have nothing but our finest goods.

I would specially urge all our dairymen to the great importance of cheaper production as a means of our ultimate victory in the world's markets. We must have a longer season of production by co-operative methods, making only the finest quality of goods, which will give us the assurance of a permanent demand. Let us push for recognition

both at home and abroad. We must have everyone connected with our business set about a lasting improvement in methods. If we can depend on this we will all have the satisfaction of seeing greater advancement in 1896 than any single year in our history. This certainly is our plain duty.

Besides holding our annual convention at Chesley, we have held several district meetings in various sections of the Province at which great interest was manifested. We gave money grants to the Provincial Dairy Show at Gananoque, the Industrial at Toronto, the Western at London, and the Central Canada at Ottawa, with good results, but I firmly believe we had better concentrate our efforts on one attractive and stimulating exhibition of our finest creamery butter the coming season. Our instructor, Mr. Sprague, has been untiring in his work, and no one can estimate the good he has accomplished. By all these agencies we have fostered the creamery business in summer, and directed dairymen to the advantages to be gained by adding the manufacture of butter during the winter to their summer practice.

There is a movement in some quarters to do away with this organization and have the work carried on by the other two Associations, but I feel that in these days of keen competition we require this Association, specially charged with the building up and enlargement of this special industry.

We feel thankful to the Hon. Mr. Dryden for words of encouragement and assistance in every way during the last year. We are delighted that he has taken such a live interest in the education of our butter-makers. Every dairyman in this fair land can point with pride to our dairy schools. No school on the continent is as well equipped for giving a thorough dairy education as Guelph. Our Kingston dairy school is doing splendid work, and the hon. the Minister of Agriculture is building another dairy school at Strathroy. Surely we must all feel proud of the special attention the dairymen are receiving.

The Dominion Government have been active in assisting to place our Canadian creamery butter on the British market fresh, and the facilities provided for the transmissal of butter to England were beneficial. There is room for still further improvement, however, and it is hoped that the expansion of this branch of our dairy industry will be such as will warrant the Agricultural Department of our Dominion in making still further improvements.

We want all our dairymen to notice particularly what both the Ontario and Dominion governments are doing for us. I feel sure we must all admit that they are doing all they can to encourage us, but it is for us to examine ourselves, our stock, our buildings, our food for our stock, and see if we are really doing all we can for ourselves. If we have not made money this last season, why? I know personally that a large number have, and further I know that a larger number have not, and I would like to urge you all to commence vigorously to improve your stock and everything in connection with your farms. Do not fail to weed out the poor cows, grow corn, build a silo, raise more pork in connection with your dairy, for nothing is more profitable. What can I say more? Loyalty to family and country demands your best efforts, and I believe you will commence at once to better your condition.

I thank the Board of Directors, officers, and all who have assisted this Association the past year. I specially thank Prof. Robertson for his constant and timely assistance, and the press for their assistance, which has been freely given. We cannot over-estimate the value of the press. (Applause.)

COMMITTEES.

I would recommend the appointment of the following committees:

Business—Mayor Mulhern, Messrs. D. M. Macpherson, M.P.P., Wm. Halliday.

Finance—Messrs. Sprague, Wenger, and Zinkann.

Nominations—Messrs. Wenger, Miller, Walton and Graham.

Resolutions—Prof. Robertson, Messrs. Croil, Walton and Johnson.

Legislation—Prof. James, Deputy Minister of Agriculture; Messrs. D. M. Macpherson, M.P.P.; John H. Croil, A. Wenger.

THE ADDRESS DISCUSSED.

Mr. J. S. Pearce, London, being called upon, said: I am sure there is a great deal for this Association yet to do. The President mentions the idea of holding an exhibition of creamery butter in connection with either one of the larger fall fairs of the Province, or in connection with all of them, as we may think best. That is a good idea, but I would like to go a little further and add to such an exhibition, lectures if possible, by some experts, and object lessons as to the different qualities of butter and their points. I think there is nothing equal to an object lesson, and if this idea could be carried out along with an exhibition of butter it would do a great deal of good. I have often thought that if the Western and Eastern Dairy Associations together should get some really fine fancy cheese that were a year old and cut them up and hand them around to those present at our exhibitions it would be a grand education to our young men, showing what a really fine cheese is like when, say, twelve months old. We had a grand object lesson in that line at Chicago, where we had cheese cut up that were two years old. Of course we could not do that with butter, but, I think, having such men as Prof. Robertson and other experts present to show the qualities of butter, along with an exhibit, and to deliver short lectures, would add very much to the interest and value of the exhibition. With reference to the work of the Creameries' Association, we all know pretty well what has been going on. Still there is plenty of work yet to be done, and the next step is to go out to the patrons and get them to take more interest in the creamery business than they have taken yet. The quality of butter depends very much on the quality of milk sent to a creamery, and if the quality of the milk is improved the quality of the butter will improve in the same ratio.

The President: There has been a movement on foot to do away with this Association and have the work carried on by the other two Associations. I think that, taking into consideration the keen competition we have in all branches of industry, the butter business requires the special attention of this Association. You remember that when the cheese men did run the butter business they devoted all their time to cheese and just "smiled" on butter. (Laughter.)

Mr. J. H. Croil, Aultsville, being called on, said: I may say that I agree with the remarks of the President, with the exception of his suggestion to concentrate the money for prizes at one point. I think that is something that is open to discussion. We have now worked up very good exhibits every year at Ottawa, and, I believe, also at London. I think last year we had just as good an exhibit at Ottawa as at Toronto, which was not the case some few years ago, when the money was all given to Toronto and London. I am sure if it is considered by the rest of the directors wise to take the course proposed I would go with them. Still, I think it is open to question whether that is advisable. As to the question of amalgamation with the Eastern and Western

Associations, I think there is no doubt about there being plenty of work for the Creameries' Association to do. They are doing a good work in the country, and one that is much needed.

Mr. A. A. WRIGHT, Renfrew, was next called. He said: There are one or two points in the address I would like to speak upon, and about which I can speak intelligently. One thing in particular is with reference to the dairy schools. I think these schools are carried on at the wrong time of the year altogether. In the winter the milk comes in in good condition—it is always sweet at that time of the year. Then at the dairy school there is an expert to take charge of the machine; but when the graduate comes to take hold of a skimming station himself and everything is in a hurly-burly, and he has not only to take charge of the separator but to take in the milk and weigh it and use the Babcock test, and the milk gets sour and he runs it into the separator and the separator gets clogged and a hundred and one other things happen which require attention—these are things he has learned little or nothing about at the dairy school. I think the two weeks term should be increased to three months, and that every man who gets a certificate should first go to some central factory and learn everything that is being done there. With reference to this matter of an exhibition, there is an old saying that anything which is worth doing is worth doing well. If we are to make an exhibit, I believe we should make a good one. Still, whether it is advisable to divide the prizes between three places, or make one grand exhibition, I am unable to say. As to this idea of doing away with the Creamery Association, I want to tell you that as creamery men we are not going to take a back seat. (Applause.) Because the cheese men have reached the pinnacle of fame and we are down, that is no reason why we should be kept down. We are the giants of the future, though at present we are weak and must have assistance. I consider the Association is doing good work, and the creameries are doing magnificent work, and the day is coming when we shall be heard with no uncertain sound. Another point the President has brought up is with reference to the cheese factories making butter in the winter time. I do not know whether you will all agree with me or not, but I do think that is the right thing to do. Now, it is an easy thing to get half a dozen magnificent cheese makers, but it is a most difficult thing to get 600 young men to make nice butter. What is the use of 600 men making butter in cheese factories in winter when six men will do it at large central factories far more easily? What is the reason for having 600 men to peddle butter all over the country when six men can do it infinitely better? I think the proper way is for every cheese factory to put in a separator, skim the milk there and then take the cream to one large central factory to be made into butter. In this way there will be less expense attending the manufacturing of it, the moving of it, and everything else in connection with it, and there will be none of this business of one man selling at eighteen cents and another at twenty cents, and so on. Do not dream of letting anyone take away the Creameries' Association. If any man attempts to put his hand on it let us stand up in our might and, like Artemus Ward, say "Why is this thing thusly?" (Laughter and applause.)

Mr. A. F. MULHERN, the Mayor of Cornwall, said: I think there is no class of men who should be treated with the same consideration as the dairymen. I consider that you are engaged in promoting interests which are most vital to the prosperity of the country—that is the agricultural interests. You are particularly interested in the production of butter, and if you will look at the returns you will find that the export of butter is gradually doubling up. That is being brought about largely by your Association. Nature has done for Canada all which enables it to produce butter and cheese superior to that of any country in the world. It only requires an intelligent application of labor to secure the best results, and it is your Association that is educating the farmers up to this point. I regret that there are not more farmers from the immediate vicinity of Cornwall present here to-day. I think in the neighborhood of Cornwall they are rather lax in taking advantage of such gatherings to better their condition, and are prepared to blame everybody rather than themselves because their condition is not better than it is. I know it will afford me a great deal of pleasure to attend your meetings and lend any assistance I can, because I recognize in agriculture the fountain head of all the prosperity in our

country, and it is your work to formulate methods whereby one great branch of the industry may be carried on more successfully. (Applause.) One of the suggestions made by the gentleman beside me, which I thought a very good one, was with reference to the young men who go to theoretical dairy schools. The young man who wants to be qualified to follow the business, I think, should be taken to one of the hardest factories possible, so that he would come in contact with every atom of the practical work. Another mistake would be to give way to any other organization. You are the people who are doing the missionary work, educating the people in butter-making, and, I think, it would be fatal to relinquish it.

The PRESIDENT: Of course there may be misconception. These dairy schools are not supposed to take in green men. They are supposed to be skilled men who go there to widen their knowledge. It is not expected that a young man should go there who has not had charge of a factory, and is not qualified to operate it. Of course a great many have gone who are not qualified in this way, but it should not be so. The students are supposed to attend the dairy school, just as teachers go to the Normal School, to qualify. After intending teachers gain all the information which they can acquire at a school, they go to the Normal School to learn how to apply it, and it is just the same with reference to butter-makers who attend the Dairy School. Now, we have no idea of dropping out of business as an Association. We are here to stay, because I believe the work we are doing is being done as no other association could do it. During the Industrial Exhibition at Toronto the directors of the three associations had a meeting jointly. One of the special objects of the meeting was to pass resolutions with reference to the adulteration of foods, which the English papers thought had taken place in Canada. We passed resolutions that not one pound of adulterated cheese or creamery butter was made in Canada, and could not possibly be made under the laws of the Dominion. Then a discussion arose as to whether we should form the three associations into two, as butter was now made in cheese factories in winter. In view of this I thought it was only proper that the matter should be brought before this Association, and that you should know of this discussion. Of course this is the first opportunity I have had of bringing it before the Association. I feel that we have work to do as an Association, and that we ought to be alive and do more work than the other two Associations, and in this way make our influence felt to a greater extent than any other organization in this country. (Applause.)

Mr. A. A. WRIGHT, Renfrew: I do not wish the idea to go abroad that I was trying to find fault with these dairy schools. I wish to say that they have done a grand work, although they have not done it nearly so well as they would like to see it done themselves. I only wanted to suggest some points whereby their work can be improved.

The convention then adjourned to enable such members as desired to avail themselves of an invitation extended by the citizens to visit some of the large factories of the town.

FIRST DAY—AFTERNOON SESSION.

The convention resumed at 2 o'clock.

HOW TO IMPROVE THE DAIRY INDUSTRY.

Mr. A. A. WRIGHT, of Renfrew, read the following paper on the above subject: I fully recognize the fact that "there are many roads leading to Rome," and of course you will not expect that I should travel over all of these, but just such as in my mind seems to be the preferable ones.

To begin, I shall merely state that in the dairying ranks there are three great subdivisions, or sections, which are immediately interested or affected, viz., the producer, the manufacturer and the purchaser, or purchaser and consumer, as the case may be. In

order that our dairy industry may be a complete success, it must be made profitable and desirable to each one of these interested factors. Smith and Jones will not continue to trade together or exchange products any longer than they find that it is mutually profitable to do so. The dairyman will not care to continue long in the production and hauling of milk to the creamery, unless his cash returns are such as will warrant him in doing so. But should he find it profitable and remunerative, he will then bend all his talents and energies in that direction. On the other hand, should the dairyman fail to deliver to the manufacturer good, wholesome raw material in the shape of milk, then the manufacturer will not care to remain in the business. So also with the consumers; unless they can be furnished with the best manufactured product at a minimum of cost, they too will seek business relations elsewhere.

Please notice how intimately these three are connected, and how absolutely necessary it is that the one should be satisfied with the dealings of the other. Notice also that it is the middleman or manufacturer who has the most difficult part to perform, for he has to please not only the dairyman or producer, but also the purchaser and consumer as well.

Now, let us begin at the beginning. Let us take up the case of the dairyman. How can we convince him that it will be profitable for him to embark, or, if already commenced, how convince him that it is to his advantage to continue in this business? What then are the conditions under which the dairyman can best produce a good, cheap, merchantable article, and at the same time make it a remunerative employment?

Please notice here, that the farmer is not going to the butter-maker to furnish him with all the information possible to assist him in the art of manufacturing fine butter or the best manner of selling the same. At least I have never heard of many cases of this kind. On the contrary, it is considered to be the duty of the manufacturer to assist the dairyman in all the various branches of his business.

This being the case, let us go back to the question, "how can we best assist the producer in furnishing an abundance of good raw material?" Here, too, there are several roads leading to Rome, and to one or two of these I shall draw your attention. Two parties can assist in this, one being the Government and the other the factory-men.

The Government can render large assistance, continuing to do as they are doing now, viz., by holding Institute meetings, where topics of interest are discussed by able and practical men, by the distribution of dairy literature, such as the Annual Reports of our various dairymen's associations, and through the bulletins that are issued from time to time from our agricultural colleges and Government Stations. There is just one difficulty about the distribution of this valuable literature, and that is, that only the more progressive farmers receive it. The question is, how are we to get it to the others. This object can be accomplished very largely in this way: Let the owner of every creamery and the owner of every cheese factory send annually into the Government the names and P. O. addresses of every patron whose name is on his books, on the first day of June, and then let all the documents to which I have referred be sent to every single individual regularly that year, through the mail. By this means all sorts and conditions of men will be reached.

And now, as to the duty of the factory-man. I do not know that I am justified in using the word "duty"; perhaps it would be better expressed by describing it as the desirable things for the factory-man to do. His aim must be to convince the dairyman that it is to his interest to produce and bring his raw material to him. The merchant advertises his goods, sends out circulars telling of the bargains he has to offer, and the factory-man, to get customers, must spend time and money as well. First of all, the factory-man must carry on his business in a straightforward and honorable way with his patrons, so that they will have every confidence in his honesty and uprightness. He should lose no opportunity of instructing the farmer as to how he should handle his milk from the time it is drawn from the cow till it is placed in the weigh can. Some factory-men go to the expense of sending to each of their patrons a monthly sheet, neatly printed, and giving short, but clear, instruction on the handling of cows and their milk.

One thing in particular it has always seemed to me that creamery men should do, and that is, to inform the patrons of the great value there is in the bye-product, *i.e.*, the skim milk. Very few, indeed, seem to realize that this bye-product can, in many instances, be made to produce almost as much money as they expend in feeding their cows. To convince them of this it would amply repay any company or factory-owner to every season take two calves, place them in good quarters, as convenient to the factory as cleanliness and other circumstances would allow, and also near the public road, and feed them during the season on skim-milk and provender, keeping a strict account of the cost of the same and letting the patrons and passersby know what they were doing by placing a large placard on the place, containing something like the following :

Look at these calves—they are being raised on skim-milk.
For further information apply at the factory.

The same thing should be done with pigs. Two lots, with two or three in each lot, should be taken, one lot fed on skim-milk alone and the other on skim-milk and provender, the cost of feed and gain in weight being carefully noted, and the actual gain duly reported. A placard similar to the one placed near the calves should be placed near the pigs, so that everyone would receive an object lesson that would not be readily forgotten. This should be carried one step further. All these animals should be taken to the nearest exhibition, duly entered for a prize, and a man stationed near them with printed slips giving full information as to how they were fed, and what they had netted in cash profits, so that all might know the superior advantages our industry had over all others for making additional profits, over and above the money received from the factory owner for the whole milk. Many will think that this is the work of experimental stations, that the Government or wealthy men should do it ; but allow me to tell you that opposition now is sharp and keen in all branches of business, and the man who to-day makes money must lead and not follow, must convince his customers in an unmistakable way that there is no doubt whatever that he is the man they should deal with.

And now, one more word on this relationship, and I will have done. You know it is impossible for a man to walk in the rain without getting wet. You know that the reason why you and I speak English is because we have always lived with English-speaking people. Now, if your patrons are to be advanced dairymen they must associate and talk with advanced dairymen. With this object in view, introduce your patrons to some of the best, most progressive and brainiest dairymen in the land. Try and induce them to associate with them all the year through. "Yes," you say, "that sounds all very well, but how are you going to do it?" On the first day of June in each and every year make out a list containing the name and P. O. address of every patron sending milk to your factory. Send this list to Hoard's *Dairyman*, requesting that a sample copy of this grand, educative paper be sent to them to read Try and induce them to subscribe, and if you succeed you will then have accomplished all I have spoken concerning associating with advanced dairymen for at least fifty-two weeks in that year, which time should do them an immense amount of good. Now, understand, I am not interested in Hoard's *Dairyman* other than as a subscriber for many years. I don't know ex-Governor Hoard or one of his staff, but I do know that if a dairyman takes his paper and reads it for one year he cannot fail to be a much better dairyman at the close of the year than he was at the beginning.

These are a few of the means the factory man should employ to assist his patrons, and by these means assist himself.

And now as to the part he should perform at his own door, in his factory and around it. Here everything, outside the factory and in, should be scrupulously clean, thus setting a fitting example for the patrons to follow. Only the best help should be employed, and this help should be paid as liberally as the business will allow. You know it is not permitted to any one individual in this world to know everything ; consequently he should endeavor to set apart at least one week each year to visit one or two of the

leading factories—not too far away—in order that he might get new ideas, see new ways of doing work, and thus try to keep abreast of the times. He should pay his patrons by the Babcock test, and thus encourage them to improve their herds, and also convince them of the fallacy of believing in a general-purpose cow.

And now as to the duty of the Government in respect to the factory owner, or manager, as the case may be. A complete list of all the creameries in the Dominion of Canada should be made out annually and a copy sent to every factory, giving the name of the factory, name of the owner or manager, the place where situated, and P. O. address, so that communication could be held between them at any time, and visits made if convenient.

We now have an inspector whose duty it is to go from one factory to another, giving instruction on all points on which it may be needed. But does not this inspector need a little brushing up, too? Doubtless he is an able and efficient officer, but still not even be any more than any one of us "knows it all," if I may be allowed to use that expression. Why, then, should not he be sent by the Government to some of the leading factories in the United States for at least two or three weeks every year—gaining new ideas, seeing more improved machinery—and then, when on his inspecting tour, he could give this information to all with whom he came in contact.

There is one subject which, it has always seemed to me, never has received anything like the attention that it should at the hands of those most interested, and that is, "the proper construction and ventilation of stables." If our farmers are ever to make a success of dairying it must be by carrying it on the year round. To do this they must provide themselves with the proper buildings for housing their cattle. They must be properly constructed, properly ventilated, be supplied with the best cow-fasteners, and have the indispensable silo attached. The question is, "who is to provide such a plan? Whose business is it to do this work?" It might be attained in this way: Let the various dairymen's associations in the Province vote a certain sum to be given as prizes for the best plan of a stable, to hold, say twenty head of cattle. Let there be five prizes, of say $30, $20, $15, $10, $5, respectively. Let the Government issue a bulletin giving plans and descriptions of each, and then have it supplemented with a descriptive chapter of the various kinds of cow-stalls and cow-fastenings. In addition, the Government should then place all this information in the hands of some one man, well qualified to speak on the subject. and furhish him with small models of the various kinds of stalls and ties, and have this man accompany the delegation that is sent out annually to address Farmers' Institutes, and in this way an amount of information could be given that could hardly be obtained in any other way. It is very desirable that a small model of a stable should be made, in which the mode of ventilation would be clearly illustrated, for if there is one thing that is perhaps more desirable than another, it is that this point should be thoroughly understood.

And now one thought more, and that is with reference to our relationship to the consumer. If we are ever to manufacture butter on a large scale and make it profitable, if our butter is eventually to have the same world-wide reputation for excellence and intrinsic value that our cheese product has, we must look to a foreign market. And now the question arises, "how are we to create a demand in England or elsewhere for our product?" This can only be done by placing our best butter on the British market continually, until such time as it is thoroughly known for its superior excellence, and until it is actually wanted and looked for by the consumer. Happily, facilities for exporting our butter, so far as proper cold storage and other requisites for doing so are concerned, have to a certain extent already been provided—but who is to do the exporting? How can it be done so that each will bear his proportionate and equitable share of the introductory work? Let each factory undertake to send forward a certain percentage of its make every fortnight—more, if they saw fit, but never less. Let this be done continuously, sending only the freshest and best made, and it would thus not be long until our product would be thoroughly known in the foreign market.

The Government should provide a man for looking after the proper and careful shipping of these goods, not the selling of them, only the looking after them by the way, and possibly to see that each factory sent forward its due share. Then, when the butter reaches its destination, the Government should provide another man to look after it there, not to sell it but to watch it, see how it sold, report any deficit to the owner and to all interested parties, and thus enable us to at once remedy any defects that would come under his notice. The points to which this agent should give his particular attention would be as to the style of package, the color of the butter, the amount of salt required, the finish of butter on top, the cleanliness of the package in transit, and other matters of a similar kind, that would come under his notice, and, above all things, to see that the agent handling our goods gave them that prominence and that careful and persistent attention that they deserved.

And now the questions arise: Where should our butter be sent, who should handle it where it is sent, and should all the butter sent forward in this way be handled by one man? I am under the impression that some one or two points should be selected, and some one man chosen in each of these points to handle all the butter that would be sent forward for the first year. These points, and the men to whom the product should be sent, should be selected by the shippers, but no person should be bound to send his product to these points, or to the person thus selected, unless he saw fit to do so. But the stated amount should go forward to such points and to such parties as he saw fit. But, it seems to me, that by thus assailing some one or two points in a vigorous and persistent way, that we ought to succeed, and I cannot see why the victory would not eventually be ours, provided we bombarded the fortress with the proper material and kept the ranks well filled up by a continuous and ever-increasing supply of reinforcements in the shape of fresh, sweet, fragrant, gilt-edge Canadian butter. (Applause.)

Mr. D. M. Macpherson, M.P.P., Lancaster. Would Mr. Wright please state the result of any tests he has made in feeding pigs and calves on skimmed milk?

Mr. Wright: I have not done anything of that kind, but allow me to tell you I am going to do it—not for fun, but because I think it is going to pay. Our factory has not yet been running a year. Last year I intended to do it before this, but we had more than we could do. We opened seven skimming stations, and had an inexperienced man at one of these stations. But I am not going to wait for the Government to do this work. It was I who started the travelling dairy before the Government took hold of it. I started it in the county of Renfrew, my wife, two experts and myself holding meetings all over the county during one summer, and the next fall I got an ample return in being able to make better butter than ever before. Now I am going to do this very thing that I suggest the Government should do, of making tests in feeding pigs and calves on skimmed milk. I am not going to do it in the dark, but am going to send reports every month to the papers. The one way to succeed is to convince the farmers that they are going to make money out of the business.

Mr. Macpherson: In regard to feeding pigs, how would you suggest it to be done?

Mr. Wright: The way I am going to do is to get some farmers to send us the milk to the skimming stations and to furnish me with so many pigs. I will do all the work if they will only furnish the raw material. When the pigs are ready for the market they will be sold, and the money handed over to the owners. I am going to carry this experiment on right beside the public road, and let everybody know just what we are doing.

Mr. Macpherson: Will you keep the pigs closed up there?

Mr. Wright: We will have a certain amount of run for them—just as much as I can get. Of course we will not be able to get as much land as we might like. It is going to cost some money, because, for one thing, we will have to provide shelter.

Mr. Macpherson: In recommending an agricultural paper, don't you think it would be well to recommend the best Canadian dairy paper?

Mr. WRIGHT: I suppose it would, but I have never seen a paper that would compare with "Hoard's Dairyman." When I wanted a butter maker I did not care whether he was Jew or Gentile. I wanted the best I could get if I had to go to Jerusalem for him. (Laughter.) I did go to the State of New York to get a butter maker, and he is a good one I do not care whether he is an American or not, so long as he suits my purpose, and it is the same with a dairy paper.

PURE WATER ON THE FARM.

Mr. FRANK T. SHUTT, M.A., Chief Chemist of the Dominion Experimental Farms, Ottawa, was then introduced, and said: We are all agreed, I am sure, that the chief object of this Association is to impart and disseminate knowledge with regard to the dairying industry, and I am very much pleased, as one who has been a constant attendant for the past five years at the conventions of the Ontario Creameries' Association, to see that year by year we have more successful meetings. It is particularly gratifying to me that the President and his colleagues have provided a programme of addresses on this occasion that is eminently practical, and one which, if acted upon by the farmers and dairymen of this district, will do very much to improve their methods in the preparation of their products. More than this, by the publications of the proceedings which have taken place at these conventions, this Association has furnished valuable information to those who were not able to attend. If it were not for a general understanding that in this way the material could be obtained, I imagine there would be a much larger attendance than we have here to-day. I cannot help saying that those farmers and dairymen who can and don't attend these conventions, are blind to their own interests. Those who attend, not only show their appreciation of the work the Governments of our country are doing for agriculture, but also practically demonstrate their belief in the benefits that are to be obtained by listening to the addresses and by taking part in the discussions. I trust that before the convention closes there will be a much larger attendance from the immediate neighborhood, which I know is an excellent one for carrying on the dairying industry.

To-day I shall ask your attention for a short time, while I bring before you a matter directly pertaining to the work you are engaged in—a matter of vital importance in the strictest sense of the word. I am to speak on the question of the necessity of pure water upon our farms. The burden of my story is that neither for ourselves, nor for our animals, nor in the various dairy operations must we use impure and contaminated water. It is true that we in Canada enjoy very many natural advantages —blessings—most of which we are cognizant of and appreciate. There are, however, some which, from the mere fact they are so common, so universal, we have not regarded with the importance that they deserve. We hear a good deal at our conventions respecting the value of various foods for the production of dairy products—with regard to the nutritive value of bran and corn fodder, and so on—and rightly so, but it is very seldom that we have urged upon us, as a matter of health to ourselves and our animals, the necessity of a pure water supply. I take it that this silence is due to the fact that we enjoy in Canada, in almost every part of it, an ample supply of water which, in the first place, is pure. If we lived in a country where water had to be purchased by the pailful, undoubtedly we should consider its quality at greater length; but living, as I have said, in a country well watered, in a country abounding with rivers and lakes, and with a sufficient rainfall over the greater part of it, the question of the purity of the water we use does not seem to occur to us. These must be the reasons for this apathy everywhere apparent on this important question. It is no less necessary and essential to have pure water than it is to have good, wholesome, nutritious food for our cattle. That is a statement which will be endorsed by all who have given this subject any study.

The functions of water in nature are many. Its universal presence alone might assure us of that. If we examine an animal or a plant chemically, we find the greater part of it is made up of water. Take, for instance, a stalk of corn. We find that when almost ripe it contains between seventy and seventy-five pounds of water in every one hundred pounds. Again, all animals, ourselves included, are largely composed of water. The same is true of animal products. Milk, for instance, contains more than eighty-five per cent. of water.

We may, therefore, rightly assume that of all the functions that water performs in nature, we have here one of primary and of paramount importance. Water is necessary to the maintenance of life and the development of plants and animals. We may consider water as the chief agent in the constitution of animals and plants, for conveying nourishment to the parts where it is needed. The first service water does for plants is to render soluble the plant food in the soil. The plant food, to be available, must be in the form of a liquid or a gas, and the constituents in the soil necessary for the maintenance of plant life must first be dissolved. They can then digest and assimilate this food into their tissues. With animals we have a very similar case. The blood is largely made up of water, and contains digested and in liquid form the food we give them. By the action of water and certain secretions the food may be digested and assimilated, and further, by the circulation of the blood it is carried to the different parts of the body where it may be needed. So you see that this function of water as regards animals is a most important and vital one. There must be a sufficiency of water in the first place, or one cannot maintain vegetable or animal life.

I do not purpose to go into any detailed account to-day of how it is that water acts in this way, or how it is absolutely essential for the process of assimilation either in the animal or vegetable kingdom. I wish, however, to-day to bear with some emphasis upon the fact that this water must be, if we wish health and vigor in our animals, and their products to be wholesome, free from pollution.

During the past eight years that the Experimental Farm system has been in vogue, we have at Ottawa made many analyses of waters from farmers' wells, and I regret not to be able to speak with any degree of satisfaction as to the quality of the samples examined. In the report of this year will be found the analyses of nearly one hundred samples sent in by farmers and dairymen throughout Canada, and you will be surprised to notice that only a very small percentage of these have been passed as pure and wholesome supplies. This is a state of affairs that should not be, and I will go further and say, need not be, because the natural water supplies of our country are of the very best quality. They will compare most favorably with the waters of any country of the world. You will see, therefore, that it is only necessary that this water should be protected from the infiltration of polluting matter—in other words, that we should maintain it in its purity.

This is a matter which we, as dairymen, now woefully and, I may say, sinfully neglect. We have regarded anything, I presume, of the character of water as good enough to drink or to use in the dairy. Of course, we have not as individuals the means at home of obtaining a knowledge of the presence of impurities, and so it is, I suppose, that we have gone on in many instances giving to our cattle and using for ourselves, year after year, water containing liquid manure, fluid excreta, which has found its way into the wells. In nine cases out of ten, it is impossible to say by mere casual examination of a water whether it is pure or impure. There are waters sent to me, however, which need no chemical examination. Anyone endowed with the senses of smell and taste, ought to be able to at once diagnose such cases; but such are exceptional cases. There are, on the other hand, many waters sent to us that are bright and brilliant in appearance, which are really reeking with organic filth.

Now, what is the character of this pollution that we want to guard against, and why is it injurious? The contamination is frequently the drainage from the stables or the manure heap—practically the fluid excreta of animals. We must prevent the infiltration of such into our wells. It is most dangerous. It often leads directly to

diseases and ill-health in the farmer's family, and, at any rate, to a lowering of the vitality and vigor in our constitution and that of our animals. It will lead to tainted milk and unwholesome products Again, this pollution is directly favorable to the growth of those germs which cause disease. Concerning these disease germs, I may have something more to say shortly.

You will all bear me out in saying that in many instances the well is situated in the barnyard or in the stable itself. Where it is in such a position, pollution must sooner or later find its way into the water. That is not where it should be. The material that thus gets into the well contains plant food. It is a fertilizer. Do not give that water to your cattle nor use it yourselves, but put it on your hot beds. The well is often robbing the fields of their fertilizer, and so you lose by this vicious custom in two ways. Everything has its right place, and we ought to realize that, both from a hygienic as well as an economical standpoint, the manure should be in the fields and not in the wells. Let me, then, at the risk of repetition, say that the wells should not be so situated as to be subject to the infiltration of this liquid manure, where they cannot fail to act as cesspools. We have plenty of data to prove that not only illness, but death, in many farmers' houses in this country can be traced to impure well water. Hygienists are at one the world over upon the pernicious, injurious effects upon the system of water contaminated in this way. Indeed, it stands to reason and common sense that that which has passed through the body should not be used again directly.

This pollution then is of the nature of decomposing animal matter. Such contains as an essential element, nitrogen, and, therefore, is particularly susceptible to change. Compounds are formed that undoubtedly are poisonous to the system, thereby rendering the water dangerous to health. But apart from this we know that this decomposing nitrogenous matter is particularly favorable for the development of bacteria or germs. Now all germs are not injurious to health; many of them are beneficial to mankind and especially to agriculturists. There are, however, those which develop within the system typhoid, diphtheria, scarlet fever and other dire diseases. These microscopic plants feed on excrementitious matter, and too often find a home in the farmer's well. How they get there, in many cases, it is not easy to trace. We have a power of resistance against these deadly foes, but we can overtax our immunity. For many years we may be able by a robust constitution to withstand their attacks, but when the system becomes "run down," we fall victims to their fell inroads. It is not wise, therefore, to run the risk. Again, we may be using polluted water for washing milk cans and in the various dairy operations, and thus disseminating disease. Surely we must guard against such a possible evil.

We must recollect then that past immunity does not necessarily imply a pure water supply, and further, that the action of polluted water is often most insidious in its action. There can be little doubt but what many cases of diarrhœa and indigestion are attributable to its effect, and these may be the forerunners of something even worse. I would ask you, therefore, to throw off your apathy in this matter, and find out whether your supply is uncontaminated, for neither yourselves nor your animals can for long withstand the baneful effects.

Now, if I have said enough to convince you of the danger that may lurk in the well, allow me to point out how we may prevent it. First of all, we must not for the sake of convenience, locate our wells in the stable or barnyard. When so situated they must eventually become catch-pits for liquid manures. Even the densest of clay soils after a period become pervious to such drainage, and in light, sandy or gravelly soils the contamination of the well water comes about in a comparatively very short time.

This leads me to speak of another matter closely akin to this. Is there any reason that in order to get to the farm buildings in the spring and autumn it should be necessary to put on long boots to wade through the pools and slush of semi-liquid manure? There is here a direct loss in dollars and cents in ferlilizing material—a waste that is preventable. On many farms the most valuable part of the manure is thus lost and little more than straw taken out to the fields. Let us then use plenty of bedding and absorbents

in the buildings and then—if we don't at once take the resulting manure to the field—see to it that the manure pile is protected from the rain. If you will only take better care of the liquid portion of the manure you will be richer farmers. Remember that leached manure is worth but little compared with that which has been well-preserved Then again consider the convenience and comfort in having clean, dry surroundings and the effect that such would have upon the young people on our farm homesteads. Is it not largely due to the dirty and slipshod ways that are still prevalent that so many farmers' sons now prefer to go into the cities rather than stay at home? Let us then take some pride in our work, keeping the cattle and the buildings and the surroundings clean, and we shall find ourselves rewarded in many ways.

It occurs to me to say that in our deposits of swamp muck we have a valuable absorbent which can be used to advantage in and about the farm buildings. When this material has been air-dried it can hold a large quantity of liquid and, moreover, yields its own plant food in the resultant compost in an available form for plant use. It contains quite a notable amount of nitrogen, which by the subsequent fermentation is converted into soluble forms particularly valuable for crop use.

In conclusion I would say that the Dominion Government is anxious to help you towards obtaining pure water supplies upon your farms by the examination of such samples as may be collected and shipped according to instructions issued by us. If, therefore, you will write to me, a copy of these directions will be sent you, and if faithfully followed, a report will be sent stating the quality of the water.

The PRESIDENT: This subject has been thought, perhaps, the most important that could be brought before this convention. It has been shown in Leeds county, in a case I know of, that sickness is entirely traceable to the water used by the family. I believe if you will examine the wells you will find there is a great quantity of water unfit for human use and consequently unfit for the use of your dairy cows. It is necessary that we have the very best and purest supply of water we can get. Farther, if farmers want their water examined and will write to Mr. Shutt, Chief Chemist, Ottawa, a reply will come back giving you instructions as to how to send your samples.

Mr. J. G. SNETSINGER: How long a distance will liquid manure filter through the ground?

Mr. SHUTT: That is not a question that can be answered in a word. The character of the soil must determine very largely the distance at which a well may be safe from pollution. In a light, sandy soil it is extraordinary the distance it will run. In a heavy soil, of course, it will not travel so quickly. Then, too, it will depend on the amount of liquid manure that is allowed to go to waste. Any soil will become gradually saturated, and if the well is situated in the barnyard the pollution will eventually find its way into it, no matter whether the soil is open or close. The question of keeping the barnyard clean will also affect the purity of water supplies. There is one question I did not, perhaps, sufficiently emphasize, and that is the absolute need of having pure water in our creameries and cheese factories, and for washing out our utensils. If we use water for washing the utensils which is impure, we are running the risk of introducing into the milk disease germs. Consider their size. They are so extremely small that it requires the highest powers of the modern microscope to see them. There may be hundreds of thousands in a square inch of water. Where the cans are cleansed with impure water they become a favorable medium for the dissemination of these germs. The water, therefore, on all farms supplying milk to towns and cities should be subjected to a rigorous examination, and the same examination should be made of wells on farms sending milk to the creamery or cheese factory. I deem this question of such importance that I trust this Association will, ere long, be able to take some definite steps in regard to a systematic inspection of water supplies. We have legislation against the adulteration of milk and other foods, and I take it that this matter is just as important. I should think it well within the scope of this Society to be able to compel farmers sending milk to factories to have a pure water supply, and, further, restrain those who have not such a supply from sending their milk.

Mr. MANSELL: In the case of a well where there are frogs, would they contaminate the water?

Mr. SHUTT: No; I do not think the frogs themselves would do much harm. I do not, however, think it is desirable to have these.

Mr. MANSELL: I have a log pump, and once in a while have pumped out a dead frog.

Mr. SHUTT: That is a different matter. Once you have decomposing organic matter, as I have already explained, there is immediately a danger to those using the water.

Mr. MANSELL: How will I keep them out of the well?

Mr. SHUTT: I do not know. I presume the well has an imperfect surface protection. If the water is polluted with dead toads or dead mice or rats it is quite possible to clean the well out, and the water may again become pure, but where it is receiving its supply from a polluted source no cleaning of the well will make it pure. In the latter case the well must be abandoned.

Mr. MANSELL: What distance from the well would it be safe to have a cesspool to to take away your kitchen water, the soil being clay?

Mr. SHUTT: If it were a tight cesspool and the drain a good one I could imagine conditions where there would be no contamination. If the cesspool is made of stone and not water-tight there would be infiltration in time if the well is within a short distance.

Mr. MANSELL: For what distance would the pollution filter?

Mr. SHUTT: If the soil were a blue clay it would be some time before it would filter very far, but in a light soil, as I have already stated, it travels both far and quickly.

Mr. MANSELL: Would it be safe to have the well one hundred feet away from the cesspool?

Mr. SHUTT: I could not say without a definite examination of the soil and surroundings. If you have any doubt of the water, send a sample to our laboratories and we will examine it. I would have the water carried off by a tight drain and have the cesspool made of tarred wood. Another source of contamination is slop water thrown out of the back door, when very often the well is not very far away. It is a dirty, filthy habit. If the slop water itself is not sufficient to cause any flow of itself, when the rain comes the pollution is washed down until finally it gets into the well. I think we might easily devise means for preventing this cause of the pollution of wells on our farms.

HOW TO KEEP UP THE FERTILITY OF OUR FARM.

Mr. Wm. BROOKS, Professor of Agriculture, at the Amherst, Mass., Agricultural College, read the following paper on the above subject:

The subject assigned to me is one of the utmost importance, and, like most subjects of that nature, it is an extremely comprehensive one. Its full and exhaustive discussion within the limits of a popular address of such length as this occasion permits is an impossibility. At best I can but give, in outline, a general statement of my views upon this subject, and this I undertake in the hope that it may provoke thought and discussion, and not with the idea that I can or should attempt to tell you exactly what to apply to your individual fields.

Well known as the ordinary significance of the word fertility is, it seems desirable to call attention at the outset to the fact that the conditions contributing to make our lands productive are numerous. It is generally understood that the physical or mechanical conditions of the soil, or to be more precise, its texture, the proportion of fine and coarse particles, its drainage, its capacity to hold capillary water and to favor the rise of water

from below, and its relations with heat have quite as much to do with its productiveness as its chemical composition. Interesting and important as a discussion of such matters might be made, I believe that it was not contemplated by your honorable President in selecting this subject, and accordingly, though I cannot forbear calling your attention to some of the results of the physical analysis of a few typical soils, I shall confine myself chiefly to the consideration of manures and fertilizers in their relations to the important question of how to keep up fertility. It should be remarked, however, in passing, that even these contribute to fertility in many instances by improving the physical condition of the soil. Still I shall be obliged to confine my attention for the most part to a consideration of the use of these materials in its relation to the composition of soils and crops, or in other words, I shall consider the subject chiefly in its chemical and not in its physical relations.

Before entering upon the discussion of this part of my subject I desire to illustrate, by calling attention to the results of the physical analysis of a few soils, the ultimate relation of physical conditions to fertility. The method of analysis followed in obtaining these results, for which I am indebted to Prof. C. W. Wellington, is that proposed by Prof. E. W. Hilgard, of California. The object aimed at is to separate the soil into a number of different grades, according to fineness, and in accomplishing this result water is used. According to Hilgard's method, the soil, from which all stones and pebbles are first removed, is divided into thirteen different grades, respectively denominated coarse and fine grits; coarse, medium, fine and finest sands; dust; coarsest, coarse, medium, fine and finest silt, and clay.

The soils selected for this illustration are the Agawam "plain" land, which is of a very low grade of fertility, and on which crops suffer very seriously in dry weather; the soil of the Hatch experiment station grounds at Amherst, which is fertile and of nearly ideal physical character; and the soil of the diked salt marsh at Marshfield, which is heavy and becomes wet and sodden in wet seasons, and bakes and cracks during drought.

	Agawam Plain. Per cent.	Hatch Exp. Station. Per cent.	Diked Marsh. Per cent.
Coarse grits	2.57	0.00	0.00
Fine grits	13.71	2.26	0.00
Coarse sands	7.43	1.48	0.60
Medium sand	1.65	0.20	1.50
Fine sand	3.54	0.40	0.00
Finest sand	17.00	2.70	1.55
Dust	7.31	30.34	2.08
Coarsest silt	16.41	4.70	5.90
Coarse silt	14.42	25.80	13.91
Medium silt	1.59	5.14	8.60
Fine silt	9.04	19.11	50.48
Finest silt	0.00	0.00	0.00
Clay	4.89	6.70	13.80
	98.83	99.56	98.47
Finest sand or coarser	45.90	7.04	3.65
Dust or finer	53.66	91.79	94.77

The significance of these figures is made more strikingly evident by massing them somewhat. We find by addition that the percentages of materials of the grade of finest sand or coarser are as follows:—Agawam, 45.90; Hatch, 7.04; Marsh, 3.65; of the grade of dust or finer, Agawam, 53.66; Hatch, 91.79; Marsh, 94.77.

In the soil of the Hatch experiment station we have that fortunate blending of materials which secures conditions favorable to agricultural operations, while the other soils represent two other extremes. The Agawam soil has too large a proportion of coarse, the diked marsh too large a proportion of the fine material.

The soil from the Hatch station is one to which it will be found profitable to make large applications of manure or fertilizers, because the physical conditions are such as to allow them to exert their maximum effect. Upon soils of either of the classes represented by the others under consideration the farmer must exercise greater caution, because with unfavorable seasons the results are certain to be poor.

And this leads me to say at this point that while the farmer cannot change, except within narrow limits, the relative proportion of coarse and fine materials in his soil, he can, by intelligent, thorough, and careful culture, do much to insure profitable returns from his use of manures and fertilizers. It is folly to lavish these while witholding the work necessary to insure fine tilth both before planting the seed and during the growth of the crop.

Let it be understood, then, at the outset that one of the most important methods of keeping up the fertility of the soil is by thorough preparation and careful culture. Not only do these insure such physical conditions that manures and fertilizers applied will do their best, but they also favor the action of the beneficial natural agencies which are constantly at work under favorable conditions converting the raw material of the soil into available food for plants. The great importance of this action becomes evident when we consider the chemical composition of the soil.

At this point it is necessary to say, that, in considering the composition of soils, plants, manures and fertilizers, I shall confine my attention to three constituents—nitrogen, phosphoric acid and potash. It is well known that all contain numerous other constituents, such as lime, magnesia, soda, silica, etc., etc., but it being generally admitted that the natural supply of these is so liberal that our crops rarely suffer because of a deficiency of any of them, it seems best to leave them out of consideration, inasmuch as a thoroughly satisfactory treatment of our subject, even thus restricted, is an impossibility in the time available.

In connection with experimental work carried on under my direction during the last six years, and in preparation for the Columbian Exposition, I have had a considerable number of soils from different parts of Massachusetts and of different geological characters subjected to analysis. The partial result of some of this work I desire to bring to your attention—not in percentages, as reported from the laboratory, but worked out in pounds per acre, in which form their significance becomes much more apparent, and for comparison therewith I present similar details for a few prominent field crops. These figures I shall have occasion to use later also in considering the application of manures and fertilizers.

PARTIAL COMPOSITION OF SOILS AND CROPS.

Soils to the Depth of One Foot.	Nitrogen.	Phosphoric acid.	Potash.
	lbs.	lbs.	lbs.
Yarmouth, one acre	5,950	3,500	1,050
Freetown, "	5,950	3,500	700
Hadley, "	7,700	5,250	1,750
Amherst, " 10 inches	6,356	8,611	10.556
Agawam, " 6 "	1,295	1,667	3,000
Marshfield, " 6 "	15,322	5,600	5,600
Crops.			
Corn, 100 bushels and stover 3 tons	163	573	107
Potatoes, 300 bushels	37	12	53
Timothy hay, 4 tons	101	37	122
Clover hay, 4 tons	178	36	183

The point to which I now desire to call particular attention is the fact made evident by these figures that, as compared with the amounts removed by even very large crops,

the soil contains an enormous supply of the prominent constituents of plants. Even the poorest of the soils under consideration, the Agawam "plain" land, contains as much nitrogen in the upper six inches as eight enormous crops of corn; as much phosphoric acid as twenty-nine such crops, and as much potash as twenty-eight such crops. Of course we all know that most of this plant-food must be in unavailable forms, for this Agawam "plain" land will not produce even one good crop of corn without manure or fertilizer. We also know that our crops cannot "lick the platter clean," or in other words that, *in order that they may obtain what they need there must be much more than they will take up at hand.*

It does, however, impress me strongly that since there exists, even in the poorest soils, such enormous stores of inert plant-food, it does behoove us as farmers to so manage our lands as to favor in all possible way its conversion into available forms. You have doubtless all heard or read of the famous Englishman, Jethro Tull, who by thorough and frequent working of the soil to a good depth raised better crops of wheat for many successive years upon the same land without manure than his neighbors did with it. Tull followed laborious and painstaking methods of hand work with the spade—methods clearly not adapted to present economical conditions, but whatever the method followed, work upon the soil costs, and it becomes, therefore, an important question to decide as to how far it will pay to attempt to substitute tillage for manures—a question, however, which must be left to individual determination. Thorough drainage, fall plowing, complete aeration and pulverization of the soil before and during the growing season, are, however, means of keeping up fertility, which often receive too little attention.

Difference between Nitrogen and Phosphoric Acid and Potash.

Before taking up the question of the selection and application of manures and fertilizers with a view to increasing or keeping up the fertility of our soils, it is important to understand the wide difference in the extent to which soils are capable of retaining nitrogen, on the one hand, and phosphoric acid and potash on the other. We are indebted largely to the careful and long-continued study of the drainage waters of the experimental acres at Rothamstead for the knowledge that soils have very little capacity to hold the former in its soluble compounds, such as nitric acid and ammonia, while under ordinary conditions they hold very tenaciously both phosphoric acid and potash, whatever the form in which they may be applied. This important difference must be kept in mind in deciding to how great an extent it is desirable to endeavor to increase the store of food in the soil. It is evident that we may safely direct our practice toward this end in so far as phosphoric acid and potash are concerned, for the bank which holds these is "solid," and a working capital is desirable; but with nitrogen we must clearly pursue a different plan. Soluble nitrogen fertilizers, if applied one season in excess of the requirements of the crop, are likely to be lost in the drainage waters of the soil before another crop is planted. To endeavor to accumulate a working nitrogen capital by the application of soluble materials such as nitrate of soda is folly; but such capital is desirable, and its accumulation in the various organic substances such as manures, stubble and roots of grass and clover, green crops to be ploughed under, etc., etc., is good practice.

Green Manuring.

What part, if any, green manuring should occupy in farm practice is a question which many are now asking, and as it is a question of chief importance in its relation to the soil nitrogen, it may well be briefly noticed in this connection. It should be understood, first, that green manuring cannot increase the total of either phosphoric acid or potash in the soil. Whatever of these elements the plant grown as a green manure may contain was taken from the soil, it can come from no other source, and it is simply returned thereto. Neither is the growth of a green crop of any great importance in preventing loss of phosphoric acid or potash by drainage, for, as I have pointed out, the *soil* has the capacity to retain these. Must we then conclude that green manuring is of no benefit in so far as

the elements under consideration are concerned? My answer is, no. The feeding roots of all plants are provided with an acid which enables them to exert a powerful solvent action upon the particles of soil with which they come in contact. The crops suited for green manuring are all especially vigorous growers. Their myriad roots ramify through the soil, dissolving phosphoric acid and potash as they go. These constituents enter into the plants, and when this is turned under to decay they become available to the succeeding crops—more available than are phosphoric acid and potash, still a part of the mineral particles of the soil. Whatever has once been a part of a plant is in condition the more readily to become so again. Thus it will be seen the practice of green manuring ultimately increases the availability of the natural stores of phosphoric acid and potash of the soil.

As regards nitrogen, green manuring may serve two important purposes: it may be made, first, a means of conserving soluble soil nitrogen, and, second, a means of gathering nitrogen from the air and making it a part of the soil capital.

Nitrogen Conservation.

The first of these two effects, nitrogen conservation, is hardly second in importance to the other. In some of the forms in which nitrogen is applied to the soil, *e.g.*, nitrate of soda, it is at once liable to loss by leaching downwards; in most of the other forms in which it is supplied it soon enters into soluble combination and becomes liable to such loss. How to prevent this loss is a question of the first importance. We may not be able to do this altogether, but the most effectual means appears to be to keep the soil full of hungry roots of a growing crop. Wherever the soil is unoccupied, especially in the late summer or autumn, with heavy rains there will be a loss of a soluble nitrogen of the soil which could not occur were the soil occupied with a growing crop, for roots of such a crop would seize upon the soluble nitrogen as fast as produced, it would become a part of the plant—an insoluble part, not again to become soluble until the processes of decay shall break down the new vegetable tissues. Green manuring, then, enables the farmer to conserve soil nitrogen. It enables him, to adopt a simile, to put the soluble nitrates which his effective handmaids, warm air and bacteria, have been producing, under lock and key, and to hold them there during the period—autumn, winter and early spring—when that active thief—heavy rain—is most likely to abscond with them.

My meaning will be clearer if I give an illustration. Indian corn has usually practically finished its growth by the middle of September. It is a crop to which considerable manure is applied, and the nitrogen of this manure is gradually rendered soluble (converted into nitrates) by the agencies at work in the soil during the summer and fall. So long as the corn is growing, its roots stand ready to take these nitrates; but these roots become more inactive at the very time when the rains ordinarily become more abundant, and between this time and winter there are two months during which we are likely to lose nitrates by leaching. To prevent this loss a hardy crop may be sown in the corn—one which will grow until cold weather actually sets in, and the roots of this crop will take up the nitrates. For this purpose I have used white mustard, sown about the first of August. It usually continues to grow until the middle of November. Winter rye may be used for the same purpose provided the land is not to be planted before about the end of May in the following year.

On many farms land is allowed to lie bare for weeks after such crops as early potatoes or rye. This is a bad practice. Something should be kept growing. The disadvantages of allowing weeds to take possession are well known. Plow or harrow and sow on some cheap quick-growing seed to police the field—keeping down marauding weeds and preventing the theft of nitrates. As an important means of keeping up the fertility of our farms I would insist, then, upon the great utility of keeping something (not noxious) always growing in our fields. Whether we should turn under in its entirety the crop grown, or utilize it as feed, is a point which I shall take up later.

Nitrogen Gathering.

We have heard a great deal of late concerning the importance to the farmer of the more extensive cultivation of crops belonging to what the botanists know as the natural order Leguminosæ, among the more important members of which are clovers, peas, beans, vetches, and lupines, because of the ability they have to take most of the nitrogen they require from the air. So far as we now know none of our other important field crops are able to do this. When we remember that nitrogen is the most costly of all the constituents of fertilizers—usually commanding from fourteen to eighteen cents per pound—and that the supply of it in the air, four-fifths of which is nitrogen, is exhaustless, we are able to appreciate the importance of this peculiarity of the members of the clover family. Time will not allow us to go into details. Suffice it to say that, through the agency of bacteria which develop in little nodules upon their roots, the clovers and their relatives are undoubtedly able to assimilate atmospheric nitrogen. How shall the farmer derive a benefit from this knowledge? Clearly by the more extensive culture of such crops as have this capacity. But this must be done under appropriate conditions, or he will fail to reap the expected advantages. Briefly, the more important of these conditions are: First, well-drained and well-pulverized soil; second, a liberal supply of the mineral elements of plant-food, such as phosphoric acid, potash and lime; third, the presence of the germs of the proper bacteria, and fourth, only a small stock of available soil nitrogen. Only the third and fourth of these, I think, require explanation. The nodules on the roots are the result of the growth of certain microscopic plants (bacteria) in the roots. In the absence of these bacteria the plant is powerless to make use of atmospheric nitrogen The bacteria which develop on the roots of different plants are distinct and different species, they develop from germs or spores. Clover nodule bacteria come from spores of that bacteria; they cannot come from the bean nudule bacteria any more than clover seed can grow from beans. Practically and fortunately clover nodule bacteria are probably found in all soils because clover has been so long cultivated that they have become everywhere disseminated. The same is true of the bacteria developing on the roots of common beans and peas. This is not likely to be the case with the bacteria developing upon the roots of such crops as are new in any particular locality. Thus, for example, the Soya bean upon the grounds of the Storrs' School Experiment Station was a failure—clearly being unable to appropriate nitrogen from the air, until the appropriate bacteria were procured from Amherst, when a seemingly magical change was produced. Attention is called to this fact to emphasize this point—farmers should not be too easily discouraged in their trials of new leguminous crops. They may succeed poorly at first, on account of the comparatively small number of their nodular bacteria present, but may later prove profitable when these bacteria become abundant, as they generally will in the course of a few years.

As a fourth condition to the profitable utilization of the luguminous crops I have indicated that they should be grown on soils containing but a small amount of available nitrogen. It appears to be a a fact that when there is a sufficiency of available nitrogen in the soil, they make little use of that from the air. They can apparently secure the necessary nitrogen from an available store in the soil at less expense of energy than is required to take it from the air, and, if you will allow the expression, they appear to be lazy, like the rest of us, and will not take two steps to get what is at hand after one. We must grow leguminous crops, then, in soils poor in available nitrogen, and should not apply nitrogenous fertilizers to them in any considerable amounts. Beyond a supply sufficient to give these crops a start, nitrogen placed before legumes is practically thrown away.

The withdrawal of nitrogen from the air through the agency of the legumes, may be made an important factor in the maintenance of the fertility of our farms. This is true whether we plow under such crops or feed them, carefully saving and applying the resulting manure, and I regard the latter as generally preferable. Every crop we grow has two values—a food value and a manurial value. Plow the crop in, and we get the entire

manurial value. Feed it wisely, we get the full food value, and, besides, in the excreta four-fifths of the manurial value. Food value and four-fifths of the manurial value, minus the cost of handling crop and manure under conditions prevailing in Massachusetts, will generally be greater than the full manurial value; hence the wisdom of feeding rather than turning under a crop which farm stock would relish. There are, of course, exceptions, but as a general rule I would pasture or cut and feed green crops grown either for nitrogen conservation or as nitrogen gatherers.

It should be remembered, also, that the manurial effect of the roots and stubble of a green crop is also considerable. In the case of red clover, it has been found that we may, under favorable conditions, cut and carry off hay crops which may contain two hundred pounds of nitrogen, and still there will be more nitrogen in the surface soil (including clover roots and stubble) than was present before the clover was planted. This seems very much like "eating one's cake and having it, too."

Manures.

In taking up that part of my subject dealing more particularly with the use of manures and fertilizers as agents for the maintenance of soil fertility—on the whole by far the most important part—it seems appropriate to speak first of manures, as these constitute a home resource upon most of our farms. As farmers, I have no doubt you all appreciate at their full value the various forms of manure, and it may seem in a measure unnecessary to spend valuable time in considering them. Yet, in the hope that my remarks may set some of you to thinking and experimenting, and at the risk of bringing "coals to Newcastle," I propose to offer a few suggestions and remarks upon the saving, handling and use of manures. We sometimes read or hear language which would lead one to think that in the minds of some there exists a notion that there is something of a conflict between manures and fertilizers. This is far from my idea upon this question, and I doubt not most of you will agree with me. It is clearly the part of wisdom first to make the utmost of home resources There may be crops, or there may be soils or fields, for which, under certain circumstances, it is preferable to use fertilizers rather than manures, and, of course, when one must purchase the elements of fertility, it is an important question whether they can be more cheaply obtained in manure or fertilizer, and I believe the decision must usually be in favor of the latter, as I shall presently show; but these facts really indicate no necessary conflict between the two classes of materials. There is clearly room enough for both.

In the remarks that follow, I shall deal principally with manures made from cattle, chiefly milch cows, and I shall refer to this as farmyard manure, as I think is the usual custom. The manure from horses I shall refer to as stable manure; that from sheep and hogs will not be specially referred to.

Manure more Complete than Fertilizer.

At the outset, it must be pointed out that manures are more complete in their composition than fertilizers. They contain all the elements found in plants, while fertilizers, as a rule, do not. Besides the nitrogen, phosphoric acid and potash manures, as has been stated, contain lime, magnesia, soda, silica, chlorine, sulphur, iron, etc. Whether this fact does not render the manure more valuable for continuous use is a question to which I shall later recur.

The values of manures varies with numerous conditions, most important among which are the nature of the food of the animals from which it is made, and the methods of handling and saving. To illustrate these points, I wish to call your attention to a few analytical results.

Composition of Manure.

Locality.	Water.	Nitrogen.	Phos.acid.	Potash.	Pounds per ton.		
	per cent.	per cent.	per cent.	per cent.	Nitrogen.	Phos.acid.	Potash
Amherst (average)	65.9	.454	.333	.569	9.1	6.7	11.2
Hadley	50.6	1.230	.740	1.400	25.6	14.8	28.0
Westfield	78.8	.398	.193	.168	7.9	3.9	3.3
Concord	55.2	.290	.211	.346	5.8	4.2	6.9
Worcester	69.8	.206	.102	132	4.1	2.0	2.6
Average 38 samples	67.3	.477	.32	.41	9.2	6.2	9.8
Liquid manure	96.25	.98	.24	.99	19.6	4.8	17.6

It will be noticed that farmyard manure on the average contains about one-half of one per cent. of nitrogen, one-third of one per cent. of phosphoric acid, and four-tenths of one per cent. of potash. A ton of such manure, therefore, will supply about nine pounds of nitrogen, nearly five pounds of phosphoric acid, and about eight pounds of potash. A cord of farmyard manure weighs upon the average about three tons. The plant-food supplied in one cord, therefore, is about as follows: Nitrogen, twenty-seven pounds; phosphoric acid, fifteen pounds, and potash, twenty-four pounds. A common two-horse cart load weighs usually just about one ton. It will be observed, however, that the analyses vary widely; a few are much better than the average, generally because they are drier, while a number are much poorer, particularly in nitrogen and potash. This inferiority may, in part, be due to differences in feed, but I believe it is in a greater degree the result of imperfect methods of saving and handling.

The figures marked "Amherst" are the average results of the analyses of twelve samples of cellar manure made from the college herd of milch cows. The cellar was well drained so that there was no foreign water, and the bottom was cemented and the walls pointed so that there could have been little or no loss of liquid. It will be noticed that the most important difference between this and the average of all the manures is a considerable larger percentage of potash. This difference we can readily understand when we know that a large part (usually about four-fifths) of the total potash excreted by animals is in the urine, which, under conditions existing on many farms, is allowed in part to run to waste. The results of the analyses of the liquid from the gutter in a cow stable affords evidence of this. This liquid, though ninety-three per cent. water, contains more than twice as much potash as average farm-yard manure. The same results enable us also to understand in part why so many manures are poor in nitrogen. It will be noticed that this liquid manure contains more than twice as high a percentage of this element as average manure. It is so well known that manure suffers loss of nitrogen also through the escape of ammonia into the air when it is allowed to heat in loose piles that we cannot wonder that they are frequently very poor in this element.

My remarks make sufficiently evident, perhaps, the precautions necessary to prevent unnecessary loss in the manure pile. They must be such as to prevent loss of urine, leaching, and rapid fermentation or heating. The first two of these conditions are secured in a perfectly drained and water-tight cellar for the accumulating manure, and third by keeping hogs thereon. These animals will keep the pile so compactly trodden that it will not heat rapidly. Of course the liberal use of absorbents such as dry earth or muck, sawdust, plaster or kainit, may be made to contribute to the desired results.

So far as the amount of labor, and the preservation of the valuable elements in the manure are concerned, this plan, still by far the most common in Massachusetts, leaves little to be desired. But its effect upon the health of the cows in the stable

above and upon the hogs in the cellar itself are such as to lead me to condemn it, at least if the cellar is closed on all sides. The bad consequences of this system can be much lessened by the liberal use of absorbents and chemicals such as plaster and kainit both in the stable and in the cellar, and by the frequent removal of the accumulated manure.

My preference, however, is to keep cattle in a wing connected with the hay barn and without a cellar underneath. The floor should be tight and the drainage from the gutter behind the cattle should be conducted to a water-tight cistern outside. An excavation at the outer end of this wing will permit the backing up of a cart or manure spreader on such a level that the manure can be dumped directly into it from a barrow or overhead trolley car. This plan would doubtless be inconvenient where only a small herd is kept and sometimes impracticable upon a large place. For these reasons I should prefer to provide a shallow cemented basin protected by a shed roof, so that the manure might be allowed to accumulate for a few weeks if desired. When the herd is large, however, the labor in handling manure—and it is this item that makes it cost—can be reduced to the lowest point by the plan of dumping into a cart or manure spreader and then applying directly to the field.

And this leads me to say that I believe most fully in the plan of applying manure to the field as fast as made in so far as this course is practicable. It is difficult to keep it without loss, or injury to the health of our stock. I would generally fall-plow the fields to be manured, and then during the fall and winter months get out and spread the manure as made. The experience and observation of many practicable men have convinced them that this is the best plan. Under this system the soluble constituents of the manure are washed directly into the soil and ammonia is not formed with such rapidity as to be driven into the air in any considerable amount. The manure as it lies upon the surface does not heat, it can hold considerable ammonia, and every rain or melting snow dissolves and carries into the soil what has been formed. It is clearly advisable to apply during the winter to the more level fields but even on those with considerable slope, if plowed across the slope in the fall, there will be little wash. The dressing of manure will help prevent it, as well as to protect the soils of the lighter class from the loss of fine particles by the action of wind.

The portion remaining upon the surface in spring has lost most of its virtue, and it may either be worked in with the harrow or plowed in as circumstances render advisable. It should perhaps be pointed out that a heavy application of manure while the soil is frozen will hinder the coming out of the frost in spring, so that it may be inexpedient to follow this plan where early garden crops are to be raised.

The plan of hauling out the manure during the winter and early spring and putting into large heaps, to be forked over and later spread has little to recommend it to the common farmer. It of course improves the mechanical condition of the manure, but it involves much labor and the pile under ordinary conditions is subject to loss through leaching and fermentation. Let any farmer who has been accustomed to follow this practice, try the plan I recommend and I believe he will become convinced of its superiority.

Use Manure and Fertilizer Together.

Upon most of our Massachusetts farms the supply of manure is insufficient. The majority of farmers use some fertilizer. It is generally wise for the ordinary crops of the farm to use these in connection with each other, rather than separately. The physical effect of the manure is generally desirable and cannot be obtained by the use of fertilizers. It prevents in a measure the cohesion of the particles in heavy clay and thus lessens the probability of baking and cracking, and it seems to increase the capacity of the lighter soils for moisture. The constituents of manure are also in many cases less promptly available than in fertilizers. It is desirable to employ the latter to give the crop a quick start. And finally, the manure is more complete in its composition than the fertilizer. The manure replaces at least in part the soda, magnesia, silica, etc., removed in crops, while most fertilizers do not. We may, it is true, raise crops for many years by supplying the three elements, nitrogen, phorphoric acid and potash (incidentally lime is applied with the phos-

phate). Lawes and Gilbert have raised wheat fifty consecutive years on the same land on ammonia salts, superphosphate and sulphate of potash, and at the present time the yield is nearly as great on this land as on that which has received fourteen tons yearly of farm-yard manure for the same length of time; but the yield on the fertilizer now begins to show a tendency to fall off, and there can be no doubt that the more complete composition of the manure is proving an advantage. Of course in such materials as common salt, sulphate of magnesia, etc., we may replace, if considered desirable, the soda, magnesia, etc., carried off in the crops, but even such replacement would leave us without the physical effect of manure—an effect which we may, it is true, in part secure by turning in a green crop. Under many systems of cropping, however, green manuring is inexpedient.

For potatoes, because this crop is generally cleaner and freer from disease on fertilizers only, I would make an exception to the general rule; and I should also except most of the crops involving much hand labor, such as onions, because there are less weeds where fertilizer alone is applied. In the case of a field lying at a great distance from the barns there is also an evident saving in depending upon fertilizers alone.

Fertilizers.

Having thus stated in outline my idea as to the saving, handling and application of manures, we may take up the consideration of fertilizers as a means of keeping up soil fertility. Under this general name are included a very large number of materials of very diverse characters. You will not expect me to take up each in detail; here as with other parts of my subject I can deal only in outline. It will be an advantage to adopt some classification of fertilizers, and for my present purpose, though not strictly scientific, I shall speak of them under the following heads: phosphates, special fertilizers, and raw materials or chemicals, and the latter will be sub-divided under three heads according to the leading element furnished, viz.: nitrogen, phosphoric acid and potash materials.

Phosphates Generally Called for by Buyers.

I have little doubt many of you, when thinking of purchasing a fertilizer, still, from force of habit, feel inclined to call for a phosphate or superphosphate. This is perhaps natural, for superphosphate was the first manufactured commercial fertilizer, and for many years the only one; and this is my reason for having taken as my general head the term "phosphates." Superphosphate, when first made, was a definite article manufactured from bones. It supplied phosphoric acid and a little nitrogen. Now the term "phosphate" means almost anything Little by little, as chemistry shed its light upon the subject, and the wider needs of plants became understood, phosphates were amended or improved by the addition of now one ingredient, now another. To-day a phosphate may be a material furnishing phosphoric acid alone, it may furnish either nitrogen or potash in addition, or it may furnish both these with the acid. Of course the guarantee of composition enables the farmer to learn if he will what he is buying; but I regard it as an unfortunate state of affairs that a term such as phosphate should not have a more definite meaning. At present, if one desires to purchase a material furnishing phosphoric acid alone in available form, he must use such term as acid phosphate, plain superphosphate, dissolved boneblack, etc.

Special Fertilizers.

A special fertilizer is one claiming to furnish nitrogen, phosphoric acid and potash in the best proportions and in the best combinations for some particular crop or a few somewhat allied crops. Thus we have special corn fertilizers, potato fertilizers, Onion fertilizers, tobacco fertilizers, etc., etc.; and of most of these we may find a considerable number of brands upon the market. Most of you may be aware that Prof. Levi Stockbridge was the pioneer in the United States in introducing this system of fertilization; and you are equally aware that he has had numerous imitators. This system undoubtedly constituted a distinct advance in the practice of feeding our crops. It was a commendable effort to adapt food to the appetite of the plant. In so far as the system is based on

the composition of the crop to be produced, it cannot be regarded as wholly scientific. The soil as well as the crop should be considered. The soil contributes to the food of the plant and soils naturally vary. The peculiarities of the crop should also be taken into account. Plants differ widely in their ability to forage for themselves. Some are like Devon or Ayrshire cows—able to tatten on scanty pasturage—others, like Shorthorns, require abundance of rich feed at hand. Thus the patato for example is a poor feeder; Indian Corn is a far better forager. The season during which the plant makes its chief growth also affects the necessity of supplying the different elements of food, particularly the nitrogen. The grass crop, for example, does not withdraw from the soil an exceptionally large supply of nitrogen. In four tons of English hay there are 113 pounds; in 100 bushels of corn and three tons of stover there are 163 pounds; yet for the grass it is best to apply considerable nitrogen in available form in early spring, while for corn a large application of available nitrogen is not generally required.

My chief ground of criticism of special fertilizers as we find them, however, is in the fact that their composition is not what it should be. Almost without exception they contain too large a percentage of phosphoric acid, and too little of either nitrogen or potash, or both of these. To obtain as much potash as he requires, he who depends exclusively upon special fertilizers must purchase much more phosphoric acid than is necessary. Permit me to call your attention to figures which illustrate this point.

Average of Special Fertilizers.

——	Nitrogen.	Phosphoric acid	Potash.
	per cent.	per cent.	per cent.
21 Potato fertilizers	2.7	10.4	5.7
4 Corn "	2.8	12.4	4.0
4 Grass "	3.9	8.9	4.9

These figures are compiled from the annual report of the Massachusetts Experiment Station for 1894; and every analysis for these crops, except one for potatoes and one for corn, was included. These varied so widely from the others that it was thought best to omit them. From the same report I take the following figures:

Relative Proportions of Phosphoric Acid, Potash and Nitrogen.

——	Phosphoric acid.	Potash.	Nitrogen.
Mangels	1.0	6.0	2.3
Red Beets	1.0	4.1	3.3
Turnips	1.0	3.9	1.8
Cabbages	1.0	4.1	1.7
Corn (whole plant)	1.0	2.2	2.8
Onions	1.0	2.6	2.1
Potatoes	1.0	3.6	2.1
Potato Tops	1.0	2.7	3.1
Computed by myself.			
Clover Hay	1.0	5.1	4.9
Timothy Hay	1.0	3.3	2.8

I leave it for you to judge whether these figures indicate that special fertilizers are correctly proportioned. In forming a conclusion it is desirable to take into account also the composition of soils, and here I ask your attention to the figures showing partial composition previously given. It will be seen that there is considerable variation. In a number of instances there is much less potash than phosphoric acid ; but in some cases the opposite is true. It should be remembered, however, that these figures do not necessarily indicate the requirements of the soil ; and it so happens that experiments with corn and potatoes upon the Amherst soil and with corn upon the same soil as the Agawam "plain" land at Westfield have demonstrated that potash is the more essential of these two constituents for these two crops.

Experimental Evidence.

And this leads me to say that we are not obliged to depend upon theoretical reasoning to show the greater need af potash on most of our soils and for most crops. Experiments in various parts of New England by many different men have shown this to be the case in the majority of instances. Dr. Goessmann's work indicates it, and in his published writings he advocates it. From his last report I quote the following in relation to garden crops : "A mixture containing the proportion of twenty-five per cent. potassium oxide, twelve per cent. phosphoric acid and twelve per cent. nitrogen deserves a careful trial." I may be pardoned for calling particular attention to some of the more important results of the experiments carried out under my direction during the last six years in various parts of Massachusetts. They indicate in a striking manner the surpassing importance of potash as a fertilizer for corn, potatoes, beans, oats and clover. The greatest number of experiments relate to corn and the average results of twenty-six experiments are as follows :

Increase per acre Produced by Different Elements.

Average of 26 Experiments.	Nitrogen.	Phosphoric acid.	Potash.
Hard Corn	5.24 bush.	2.98 bush.	9.5 Bush.
Stover	379 lbs.	196 lbs.	1,028 lbs.

With rare exceptions the results have been similar to those indicated by these figures, and in a majority of instances still more favorable to the potash, The results for potatoes have been of the same character, but less marked. In the case of clover they have been decidedly in favor of potash. I may remark here, though I shall refer to this again, that for grass nitrogen appears to be the most important. I must not, however, dwell longer on this part of my subject. I have said enough to indicate that I do not believe the best way to keep up the fertility of our farms is to buy and use special fertilizers. Good crops have undoubtedly been raised upon them, but I believe usually at an unnecessarily large expeniture for fertilizer because of the excess of phosphoric acid for which the buyer must pay.

Reasons why Potash is Deficient.

That Potash, more frequently that phosphoric acid, is relatively deficient in soils, is the natural result of known causes. First, most farmers in beginning to use fertilizers employ superphosphates, which contain no potash. Other materials commonly used are fish, bones and Peruvian guano, the first two entirely, the latter being almost totally

deficient in potash. It is true that wood-ashes were somewhat used but the supply was small and the soap-makers often extracted most of the potash. I have shown that the special fertilizers of to-day are most of them rich in phosphoric acid and poor in potash; and many of you are using phosphates entirely. Second, all of our important crops take much more potash than phosphoric acid from the soil. Third, it is the potash, to a far greater extent than the phosphoric acid, which has been subject to loss in our farm-yard and stable manures, because voided in the urine. Fourth, the practice of late so common, of buying concentrated feeds, like bran, cotton seed, linseed, oats, etc., for our cows and horses enhances their richness greatly in phosphoric acid and nitrogen, but not in potash. In view of these facts can it be wondered that our crops generally show a greater benefit from potash than from phosphoric acid application? It should not, of course, be understood that the latter is unnecssary. It is usually required, but not in the proportion in which it exists in special fertilizers.

Advice to Those Using Special Fertilizers.

Many of you will doubtless continue to use special fertilizers. You do not believe that you can study out anything better, or you fear the labor involved in the mixing of the materials. Upon such I would urge an experiment. On part of your field, in addition to your special fertilizer, use some material furnishing additional potash. For all the common crops except potatoes and tobacco this may be the muriate in amounts of from 125 to 200 lbs. per acre; for potatoes use high grade sulphate at about the same rate.

Raw Materials and Chemicals.

Either of the terms "raw materials" or "chemicals," as applies to the numerous substances, most of which furnish but one or two of the important elements of plant food, is in a certain sense inappropriate. Many of them are directly incorporated in mixed fertilizers. They are no more "raw" before mixture than after. Dried blood and dry ground fish are examples. The term "chemical" is appropriately applied, perhaps, to substances liks muriate of potash, sulphate of potash and nitrate of soda, which have been subjected to a chemical process of manufacture before being put upon the market, but these are chemicals precisely to the same extent after mixture in the complete special fertilizer. They do not undergo any further chemical change. They are simply mechanically mixed with other materials. I prefer the term "unmixed fertilizers." All may probably be included under this single head, for all have a fertilizer value. They differ indeed, very widely in their degree of availibility, such for example as leather and apatite. These might properly be called "raw" because it is best to subject them to special treatment before applying them to the land. Others like nitrate of soda and superphosphates are immediately available. Between the two extremes we have every possible degree of availability. I shall consider separately the materials valuable chiefly for nitrogen, for phosphoric acid and for potash.

Nitrogen Fertilizers

Some of the more important materials which are used chiefly as a source of nitrogen, mentioned in the probable order of their availibility, are nitrate of soda, sulphate of ammonia, dried blood and flesh meal. Besides these there are a number of animal substances rich in nitrogen, but also containing considerable phosphoric acid. The more important are dry ground fish, tankage and bone meal. Cottonseed meal, though less generally used, except by tobacco growers, should also be mentioned. Any of the above materials may sometimes be wisely used by the farmer as a source of nitrogen, and in determining which to purchase, the price of a pound of nitrogen should be one of the leading factors considered. The value to the farmer of a pound of nitrogen in these various materials may not be the same in all. If wisely used the more available are generally the more valuable; but since the more available nitrogenous fertilizers are also

more liable to waste by leaching; this is not an invariable rule. Many would prefer sulphate of ammonia and dried blood to nitrate of soda, because they are less subject to waste. It does not answer to make a heavy application of nitrate of soda in early spring to a slow growing crop. For this reason I generally advise the use of a mixture of materials. Nitrate of soda may be used alone by making several small applications, but it is generally less expensive to make one application of mixed materials. As a means of feeding a crop with nitrogen I would use a mixture of nitrate of soda, dried blood, fish or tankage and bone meal. At present prices, however, it should be remarked that nitrate of soda is one of the cheapest sources of nitrogen in available form.

Other materials furnishing nitrogen, such as horn and hoof waste, wool and hair waste, and leather should be left to the manufacturer. Tneir action is so slow that it is inadvisable for the farmer to purchase them.

Phosphoric Acid Fertilizers.

The most important of these also mentioned in the probable order of their availability, are superphosphates, including dissolved bone black, tankage, dry ground fish, phosphatic slag, bone meal, Florida phosphate, South Carolina phosphate, phosphatic guano and apatite. Cottonseed may also be mentioned as of considerable importance in some localities. Tankage, fish, bone meal and cottonseed meal, it will be remembered, have been mentioned as as also furnishing nitrogen. The others in our list furnish only phosphoric acid. In selectiong from this list, the availibility and the cost of a pound of phosphoric acid should be the points considered. In general the more available the higher the cost. A pound of soluble phosphoric acid in superphosphate costs about six and one-half cents per pound. A pound of acid in a more insoluble form, as in South Carolina rock, can be bought for about three cents. If required for immediate use by the plant the farmer must pay the higher price, but if he can buy and apply in advance of present need, he may effect a saving by buying the cheaper form. Nature will in the course of a few years render it available. Dr. Goessmann's special phosphoric acid experiments are of interest in this connection. Without going into details, I may say that his plan is to apply equal money's worth of phosphoric acid in different materials to plats of land liberally supplied with nitrogen and potash. The materials selected have been dissolved bone-black, South Carolina posphate, Florida rock phosphate, Mona guano and phosphatic slag. According to the system followed, two or three pounds of phosphoric acid in the cheaper natural phosphates have been applied for every one pound in bone-black. This experiment began 1890, the crop being potatoes. The dissolved bone-black gave the largest crop, but was followed closely by the South Carolina phosphate and the phosphatic slag. In 1891, the crop was winter wheat. The South Carolina phosphate, Mona guano and the slag each gave a larger yield than the bone-black, but the latter had considerable more straw than either. In 1892 the crop was Serradella. The plats in order of their yield, beginning with the largest, were: Phosphatic slag, Mona guano, South Carolina phosphate, dissolved bone-black and Florida phosphate. The last named, however, received no phosphate the previous year. In 1893 the crop being corn, the order of yield of grain was: Mona guano, South Carolina phosphate, dissolved bone-black, phosphatic slag and Florida phosphate. Both the slag and the Florida phosphate stood relatively much higher in the yield of stover. During 1894 the field was in barley without further application of phosphates, and the order of yield was: Phosphatic slag, Mona guano, South Carolina phosphate, dissolved bone-black and Florida phosphate. The result is similar to that of the preceeding years.

The essential point to be noticed in connections with these experiments is that while at first the dissolved bone-black gave the largest yield, in the second year even, the cheaper natural phosphates exceed it and have exceeded it every year since. No one will doubt that they will continue to exceed it for several years if the land be left without the further application of phosphates, for they have been used (at the same cost) in two or three times greater amounts.

Potash Fertilizers.

The more important of these are sulphate of potash, muriate of potash, kainit, potassium and magnesium sulphate, and wood ashes, the latter supplying also phosphoric acid. More recently a double carbonate of potash and magnesia is being offered from Germany. It is claimed to be very superior for tobacco and fruit crops. This is the same compound of potash which comprises the most valuable portion of wood ashes. In all of the materials named the potash is quite promptly available; a portion of that in the ashes is the least so. At present prices the muriate of potash is the cheapest source of this constituent in Massachusetts, and it may be safely used for most farm crops. My experience indicates that for the potato the sulphate is superior, producing the larger yield and of superior quality. There is some evidence that the muriate, if applied during the autumn or winter, will answer equally well. I have planned to test this point the coming season. I am aware that many prefer ashes as a source of potash, and it is doubtless true that their physical and chemical effect on many soils give them an advantage. When however, a Massachusetts farmer is looking for a material which will furnish available potash for the least money, he cannot afford to take ashes. The potash in them generally costs about eight or nine cents per pound. In the muriate it can be bought for about four and one-eighth cents per pound.

How to Keep up Fertility with Fertilizers.

In summing up the whole question of the best method of using fertilizers, I have to say that I am strongly impressed with the wisdom of the plan proposed by Wagner, which you will find described at length in a translation by Dr. C. W. Wellington, published in the Msssachusetts Agricultural College Report for 1890.

Stated as briefly as possible the plan is as follows: Since phosphoric acid and potash are retentively held by soils, it is recommended to apply these liberally during a series of years, selecting for this purpose the cheapest forms, with a view to accumulating a reserve or working capital of each. It should be remembered that a very large excess of either may prove injurious. There is, however, little danger that the average man who depends upon the farm for a livelihood will apply enough to be harmful. Continue this liberal yearly application as finances make possible until a simple experiment shows that a further application will produce no increase in the crop. Thereafter from year to year aim to supply a little larger amount of each than the crop receives from the field. This very slight excess may serve to cover any possible loss of any constituent. I would advise the opening of an account with each field. On the one side charge it with the food applied; on the other credit with the plant food recovered in the crop. You will look for a close agreement between the two sides only in the case of phosphoric acid and potash. The nitrogen, you remember, is subject to waste. You think such an account will involve much labor, but you are mistaken. The experiment stations publish already reports which make it simple. The matter can, however, be still further simplified and doubtless will be. Let the station issue tables which show how many pounds of nitrogen, phosphoric acid and potash there are in one hundred pounds of different fertilizers; how many pounds in a cord of manure; how many pounds in one hundred bushels of grain, vegetables, etc., how many in one ton of hay; and knowing what you apply, and the crop harvested, there is not one of you but can fill out the account at a glance. Set your boys and girls to work upon it. It will provoke thought both in them and in you. It will be as serviceable in its field as a cash account in regulating expenses.

I cannot tell you how to make two sides balance. If we knew, farming would be royally profitable. The plant food in one hundred bushels of potatoes can be purchased for about five dollars; and in all other important crops for a figure much below their usual value. There is ample margin to cover interest taxes and labor. It is because we waste so much that our crops are unprofitable. Let us adopt means to know just how much we are throwing away. When we understand in what the leak consists and how great it is, we shall set to work the more earnestly to prevent it.

I would keep the account with nitrogen as well. Here, however, is a leak—toward the sea—that perhaps we shall never be able to entirely prevent. Wagner says that we must expect—even on land where there is an abundance of phosphoric acid and potash—to apply three pounds of nitrogen for every two recovered in the increase of the crop. I hope I shall some day be able to do better. Let us know the exact size of the leak in our farming operations. I fear most of us use more than three for two.

In feeding crops with nitrogen we must always keep in mind that the soil does not long hold this element. This has already been stated but the matter is of much importance. In providing for the crop of any season, combine quick and slow acting materials as a rule; or if you decide upon nitrate of soda apply half at planting, one-fourth when the crop is one-quarter grown, the balance when it is half grown. As for the amount to use, until we learn how to do better, apply one and a half what the increase expected in the crop will remove except for legumes. For these use but very small amount to give them a start. Force them to draw from the air.

General Rules.

For corn, potatoes, clover, peas and beans make potash a prominent constituent of the fertilizer used. For grass and in general all crops which start into growth very early in the spring, use nitrate of soda freely. This is necessary, for the fall and winter rains wash out of the soil most of its available nitrogen compounds. During the warm summer weather, such compounds are formed by natural agencies from the organic matter in the soil and are ready in season to feed a late growing crop like corn. For such a crop therefore, it is unnecessary under ordinary circumstances to apply a large amount of nitrogen.

Phosphoric acid hastens the ripening of most crops, and a liberal use of it may be an advantage where earliness is particularly desired. It is also, according to Wagner, particularly essential for all fodder crops.

Summary.

The leading points that I have endeavored to bring out are the following:

1. The productiveness of the soil depends in no small measure upon its physical character.

2. To secure the conditions essential to the best effects of manures and fertilizers, and to utilize in so far as practicable the natural resources of the soil, which are enormous, good drainage, fall plowing and thorough tillage are essential.

3. Soils can hold phosphoric acid and potash; they do not hold soluble nitrogen. We may wisely endeavor to accumulate a reserve of the two former, but not of the latter except in the form of organic matter.

4. The culture of suitable crops which can grow late in the fall enables us both conserve and gain nitrogen. The latter purpose is well served only by leguminous crops, of which the clovers are the most important. We should aim never to allow fields to lie bare during the season when the ground is open. It often pays better to feed crops grown for this purpose than it does to turn them in. The stubble and roots have a great manurial value.

5. So manage as to prevent loss of urine and ammonia of manures. Apply to the fields when fresh, aiming to reduce the labor of handling it to a minimum.

6. Special fertilizers are not correctly proportioned. They contain relatively too high a proportion of phosphoric acid. If they are to be employed use potash with them.

7. It is generally best to use manures and fertilizers together rather than each by itself.

8. Unmixed fertilizers in great variety can be obtained and by their use, in connection with home-made manures, the farmer can keep up the fertility of his fields at less expense.

9. In the use of phosphoric acid and potash follow the plan of accumulating a large working capital.

10. For phosphoric acid depend chiefly upon cheaper natural phosphates to accomplish this.

11. For potash the cheapest present source is the muriate.

12. In supplying nitrogen use mixed materials of different degrees of availibility, or if choosing to depend on nitrate of soda, apply at two or more different times. Do not apply nitrogen in large excess of the requirements of the crop under cultivation.

13. Open an account with your fields, charging each with the plant food applied, crediting each with the amounts removed in the crops. Try to make the two sides of the account balance. We should be able to do this pretty nearly for the phosphoric acid and potash. We cannot expect so close an agreement for the nitrogen.

In conclusion, I believe in general in broadcast application both of manure and fertilizer, and would keep both near the surface. In some cases, a part of the quick acting fertilizer may with advantage be put in the hill or drill. For potatoes, drill application of all the fertilizer has given a larger yield than broadcast in my experiments. This was upon land of moderate fertility.

For crops in general, materials supplying from forty to sixty pounds of nitrogen, from forty to sixty pounds of phosphoric acid, and from sixty to a hundred pounds of potash will generally give satisfactory results, provided a system of rotation, including some legumes, is followed to furnish a part of the nitrogen. If this is impracticable, considerably more of this element must be furnished.

You have, perhaps, expected that I should give you formulæ for different crops. I do not consider it best to do this. I do not know your soils ; I am unfamiliar with your conditions. If you desire to know what I have used and the results I can tell you, but I cannot promise equal success to you.

Just one more point, and I am done. If plant food is to be purchased, my experience leads me to believe that fertilizers will furnish it at less cost than manure. For six years two plats of land have been continuously under the same treatment at our grounds at Amherst. One has received yearly nitrate of soda at the rate of 160 pounds; dissolved bone black, 320 pounds, and muriate of potash, 160 pounds per acre. The other has received yearly five cords of good manure. The crops in the order of succession were corn, corn, oats, grass, grass and corn. The increase in crop due to the use of fertilizers has been worth $124.41 ; the fertilizer has cost $69.12 for the six years. The increase where the manure has been used has been worth $149.49 ; the manure, at five dollars per cord, has cost $150. The chief superiority for the manure has been in the grass crops, doubtless because of the more liberal supply of nitrogen. In six years, where the fertilizer has been used, we have applied 120 pounds of nitrogen ; where the manure has been used, we have applied not less than 600 pounds of nitrogen. The fertilizer could have been made to make a much better yield of grass by the use of more nitrogen.

On the college farm, I have for five years been comparing various mixtures of fertilizers with manure for grass. The increase in crop pays for a judicious mixture of fertilizer ; it has not paid for manure at five dollars per cord.

Mr. MURPHY : Do mangels require a large amount of potash in the soil?

Prof. BROOKS : Yes. The fact is that our fertilizers are not correctly proportioned. There have been many men in New England who, for years, have been urging that fertilizers should contain much more potash and less phosphoric acid than they do. Our manufacturers are slowly changing their practice, but we have not even yet got enough potash in our fertilizers. I am not, myself, much of a believer in a very large use of

these special fertilizers, chiefly because they are not correctly made. They contain too much phosphoric acid; too little potash. I believe in purchasing unmixed materials such as can be bought in all our markets. In this country you have ground apatite or Canadian phosphate, ground bone, dissolved bone-black, plain super-phosphate. I believe in buying these unmixed materials, and putting them together to suit the crop; but, of course, to do that to the best advantage requires considerable knowledge of such matters.

Mr. D. H. McLean: There is a custom of summer fallowing here. Is there a great loss of nitrogen from that practice?

Prof. Brooks: Undoubtedly there is. The practice of summer fallowing is one which was formerly very common. It is a practice which the work of Sir John B. Lawes and Sir Henry Gilbert has done as much to show the disadvantages of as has the work which has been done in any part of the world. You render the plant food in the soil available by this means, but at enormous cost. You render the nitrogen available, and away it goes with the first rain. That is where the cost comes in, and I am sure most close students of this subject are thoroughly convinced that it is best to keep something always growing on the land. The action of the roots upon the soil is to reach out for the nitrogen as fast as it becomes soluble, and then in the late fall you turn it over, and the roots will not rot until spring, when the nitrogen becomes available for your new crop.

Mr. R. J. Graham: There is a practice of turning stubble under immediately after the crop is taken off.

Prof. Brooks: It is a bad practice to leave it bare. I would infinitely sooner turn it over than let it grow weeds which will be a source of future trouble; but it is better to sow some kind of seed to turn under later on. Winter rye is a good crop for the purpose, also rape or white mustard. White mustard does not become a weed. The mustard which you find in your fields is black mustard. I have raised the white mustard for seed, in which case some of it was inevitably scattered, but still it does not become a weed.

Mr. Pearce: Is the seed white?

Prof. Brooks: Yes.

Mr. Pearce: How does it compare with rape for a fall crop?

Prof. Brooks: It is not quite as good.

Mr. Graham: Would it affect the flavor of the milk?

Prof. Brooks: It would:

Mr. Graham: What could we sow that would be perfect and safe for us as dairymen in this respect?

Prof. Brooks: There are various things. You can use rye.

Mr. Graham: It would not make much growth.

Prof. Brooks: Do you propose to plow again in the fall?

Mr. Graham: Yes.

Prof. Brooks: No, it would not make much growth.

Mr. Graham: Our custom is to turn under the stubble.

Prof. Brooks: I would prefer a quick growing plant like mustard. The young stock and sheep are very fond of it.

Mr. Graham: It would spoil the milk for the factories if the cows got on it.

Mr. D. M. Macpherson, M.P.P., Lancaster: How would millet do?

Prof. Brooks: It would do, but would not make much growth.

A Voice: What is the cost of white mustard?

Prof. Brooks: It costs with us about two dollars a bushel—from two to three dollars—but I advise any farmer who proposes to use it for the purpose I have

suggested to raise his own seed. It can be raised at much less expense than it will cost to purchase it. I see no reason why it should not do. It is extremely hardy. It may be sown in corn fields with a view to its growth after the corn is cut, and it has generally continued to be green until about the 5th or 10th of November. It is just about as hardy as the turnip or cabbage, and belongs to the same family. You can sow from twelve quarts to one-half a bushel per acre, according to the richness of the land.

Mr. J. Lockie Wilson: What kind of corn do you prefer for the silo?

Prof. Brooks: We prefer a corn which will nearly mature before frost. We cultivate both flint and dent; among the flints, the Longfellow and Sanford—both are good. We let them grow until the ears become glazed, and then put them in the silo. We do not want more than seventy-six to seventy-eight per cent. of water in the silo. For a Dent variety, Sibley's Pride of the North is good, but there are other farmers who go in for something larger, and take the Leaming field corn. That is a kind that will sometimes ripen with us, but is not a reliable kind for grain. There are some advocates of sweet corn, but on the whole I think it makes a somewhat more acid silage.

Mr. Graham: Suppose you feed it dry?

Prof. Brooks: Sweet corn is undoubtedly better. But you know the ears do not keep very well. They are likely to mould unless you get them well cured.

Mr. Graham: How does it compare with other corn for feeding in the fall?

Prof. Brooks: We like it very much for that purpose, considering it rather better than the ordinary field corn.

Mr. Graham: What time do you put your corn in, and how long has it to mature before you have frost?

Prof. Brooks: We plant it generally from the 5th to the 20th of May, and we ordinarly consider ourselves comparatively safe from frost up to the 10th or 15th of September.

Mr. Graham: Your season is not much, if any, longer than we have hear.

Mr. Milton: Do you approve of this corn dried or cured by the ensilage system?

Prof. Brooks: I much prefer the ensilage system. We have been carefully comparing both methods of feeding, the result showing that there is some loss of feeding value in the dried corn. A loss in this way occurs from exposure to the weather, and a still more serious loss from the fact that the cattle reject a good deal of the plant which is, on analysis, found to be good food. Some loss occurs from fermentation under the silo system, but it is not any greater than the loss from exposure to the weather, from the crumbling which takes place in the fields, and from the rejection of parts of the corn by the animals. In the case of well made ensilage they eat it all.

Mr. Graham: If they should eat all the dried corn would they get as much good from it as from silage?

Prof. Brooks: I do not think they will, because I think the succulence of silage is a point in its favor. I think we may make a comparison like this: Which would you prefer, a nice sweet fresh apple, or a dried apple?

Mr. Brown: What is the value of gas lime as a fertilizer?

Prof. Brooks: Lime in any form is of use in rendering land productive; not, however, because it furnishes something that the soil lacks, but because of its action upon the natural soil constituents. There is truth in the old German proverb that its use "makes rich fathers and poor sons." Why? Its use enables the plants to extract the constituents from the soil to a greater extent than is possible without it. Now as to gas lime. It is lime used for purifying the gas. Quick lime is taken for this purpose, but as it leaves the gas works it is moist and has become slaked and contaminated with impurities and its action is much less energetic than is the action of quick lime. Still it has the same kind of action. It helps you to get out of the soil some of its important constituents.

Mr. Brown: Here we have a gas house, but the gas lime has no admirers among the farmers. In the Old Country, where I lived, they draw it a long way and mix it with night soil and put it on their turnip land.

Prof. Brooks: I would not mix it with the night soil, for the reason that it will drive off part of the ammonia into the air. I should put gas lime directly onto the land.

Mr. Graham: Do you ever use any salt on the land?

Prof. Brooks: We do not make much use of salt as a fertilizer except for a few special crops. For mangel wurzels we have sometimes found it very beneficial. The mangel was originally a seaside plant, and seems to require more salt than most plants. I have seen an application of about 300 pounds to the acre increase a crop by quite a number of tons on an acre. Apparently there was no other cause for the increase. We get a good deal of salt now in some of the fertilizers we buy, so that we use it indirectly.

THE ANNUAL BANQUET.

As in the case of other places where the conventions have been held, the citizens of Cornwall marked the Association's visit to their midst by tendering to the visitors a banquet on the evening of the first day. The spacious dining-room of the Rossmore House was comfortably filled on the occasion, by a company who enjoyed themselves to the utmost in discussing first an excellent bill of fare and afterwards the subjects included in a lengthy toast list. Mayor Mulhern occupied the chair.

SECOND DAY—MORNING SESSION.

The convention resumed at 10 a.m., the President in the Chair.

PROPER COW STABLES.

Mr. A. A. Wright, of Renfrew, introduced the question of the proper construction of cow stables. He said: The land feeds the ravens but they have got to scratch for their food, and in like manner we are expected to work for anything we get. Now I want to make use of every man who is here so that I may find out about the different kinds of cow stalls, and I am not going to wait for the Government to help me in this matter. I am bound, so far as I am concerned, to get up a whole set of plans of stables, stalls and cow-ties. The Government and the Association are not going to do it. When I recommended it I knew they would not, but I did it so that it might come up for a memorial against them in future times. (Laughter.) I am told there is a gentleman about a mile from here who has a very fine stable, and an invitation has been extended to any who would like to visit it, to do so, and a bus will leave to take those out who choose to go when the convention adjourns this morning. He thinks far more of his cows than of his horses, and that is right, because a good dairy cow now is worth more than half a dozen horses. If a man is going to bring fine clean milk to the creaming stations the cows have to be kept in stables which are properly ventilated and healthy. I understand the very best ventilated stable in the Province is owned by Mr. Tillson, of Tilsonburg, and if any of you go near there I would advise you to visit it. If anyone knows of a better cow stable anywhere I wish he would drop me a post card, that I may go and see it. After I get all the information I can I am going to let the Creameries' Association have it.

Prof. Brooks was called to describe the stables at Amhurst, Mass., experimental station, and said: I presume I may not be able to bring to your attention anything superior to what you have in your own country, but it is always of interest and practical value to know what those who live elsewhere are doing. Will Mr. Wright allow me to make one suggestion in connection with the Bidwell stall? I feel certain that if he will write to the makers and explain what he wants they will give him a stall.

Mr. Wright: I did that very thing. The stall is not patented here and they would not do it.

Prof. Brooks : They have given us a stall at the college. That is a good way from here, but if you cannot find one nearer and will come to Amherst, we will be glad to show it to you. However, we have not put the Ridwell stall in our new stables. I have had considerable experience in putting up stalls during the last three years. We began a new barn in 1893 and finished it in 1894. We have stables which will accommodate about one hundred head of cattle—about sixty-five in one stable, and the balance in another. The plan of construction may not be suitable to this country, because I have noticed that most of the farms between Montreal and Cornwall are level. We have put up what is commonly known as a hillside barn, one hundred and sixty feet long by sixty feet in breadth, with one end to the face of the hill. In the basement we have nine feet clear, for implements, above this the main building has posts twenty-three feet in height. The building has a gambrel roof We drive into a floor in the roof to put down the hay, having a sheer fall from the body of the wagon of about twenty-six feet. This makes the storage of the hay very easy, indeed. We do not need a horse fork. It can be pushed right off the waggon with the greatest rapidity. At one side of the main floor, over what we call the hay bay, we have extended the floor to the side of the building. This floor is about twenty feet from the end of the barn. When we have driven in and unloaded we drive to the down-hill end and back the wagon into this space. The wheel is cramped and backed in the opposite direction, and we drive out in the same way we went in. We drive in on the same floor with fodder for the silo as that into which we drive with hay. We cut the fodder on this upper floor and put it into the silo by means of carriers. We have three silos each thirty-two feet deep.

The stable for the cows is in the form of an L or wing on the south side and on a level with main floor of the barn. This wing is forty-two feet wide by one hundred and thirty-five feet long. Its construction is rather new with us From the floor to the roof at the plates is eight feet, and the roof has a slant for about two-thirds of the distance from the outer wall to the ridge and then the wall goes up again six feet, and from this the slant to the ridge is completed. It is what is called a monitor roof. The object of this monitor roof construction is to promote the circulation of air without subjecting the animals to draughts. We have plenty of windows of good size. There is nothing so efficient as sunshine as a germicide to kill the germs of tuberculosis and other diseases. We have windows on each side in the lower part of the wall and also in the upper part of the wall. In the lower windows the bottom sash slides into the wall. The upper sash is hinged at the bottom and turns in at the top. The object of hinging the windows in that way is to allow the circulation of air and at the same time prevent draughts. The upper windows are also hinged at the bottom and turn in. You cannot reach these windows from the floor, so we move them by means of an appliance in use among us in hot houses. Cranks which can be operated from the floor move all the windows in the entire length of the building at one time. The mechanism is simple and not very costly, and appears to be durable and we find it very satisfactory. In a narrow building of this kind we get good ventilation. We have not adopted the Bidwell tie. It has perhaps many things to recommend it, but it is somewhat crude and rough as made by the owners, and it violates the essential principle which I kept in mind in building this stable. We have had a great deal of trouble with tuberculosis, and I determined, so far as possible, to make the whole interior plan of construction with just as few projecting beams, mangers, etc., as possible. The Bidwell stall has boxes, etc., and I do not like them. To give you an idea of the construction,—beginning with the outer wall there is a passage eight feet in width. The floor of this passage is of solid cement. The gutter pitches from the ends to the centre, where it is six inches deep. We do not mean ordinarly to have a surplus of urine to flow along this drain, generally using absorbents enough to take it up. I have provided an outlet from the lowest point of the gutter on either side with a cistern outside, and connecting with that is a water tight sewer pipe. Leaving the gutter, there is a flat form on which the cows stand, made in different widths for cows of different sizes, from five feet three inches down to about four feet six inches. Then there is the ramp and in front of it the trough for feed and water. It is shaped like an open V and is made of cement. The platform on which the cows stand is of plank.

A Voice: What kind of wood?

Prof. Brooks: We use yellow pine. It is quite durable.

A Voice: Have you hemlock?

Prof. Brooks: We would not like to use it. The yellow pine will not rot, and is not likely to splinter so much. Now, this V shaped trough is about eighteen inches in width. It runs the full length and is divided into sections and each section has a pitch towards the centre. At each end there is a tap—which we open when we want to water the animals—there being an outlet at the lower part of each trough. Besides watering the animals, this washes out the troughs and keeps them clean. We use the same trough for feed. We have, however, a moveable rack, which is turned up when the animals are out of the stalls and serves as a rail to prevent them from walking right out into the floor. They can come in and stand with perfect comfort when it is up, and if we are to water them we leave it up, but when we are to feed them we let it down and it divides the trough into individual mangers. This is planned in such a way as to be durable and simple in construction and not likely to get out of order. While some people might think this moveable arrangement objectionable, it allows the trough to be easily cleaned, and it is in the dust and saliva which accumulate in cracks and corners that germs find their congenial home. When this moveable rack is turned up we have a plain cement trough, and we save more time (as well as make a more thorough job of cleaning out the trough) than we lose by having to move the rack. There are two rows of cows. There is a floor twelve feet in width between them. There is at each end a big door, large enough for a load of hay to pass through. We have scales where we can weigh the feed. Ordinarily the hay and silage are brought in on trucks. In some parts of the States they have adopted a sort of trolley system overhead, similar to hay fork carriers, for that purpose. We are nearly all agreed that it is better to have the barn and stables by themselves, so that the cattle will have no feed above them and no manure below them. I do not know that you would altogether like our tie. It was an experiment—I am not altogether suited with it myself; but the cows are, I am sure, for it gives them the utmost liberty and comfort. It gives the cows so much liberty that it is rather more work to keep them clean than is desirable. The tie we are using is Waters' labor saving stable fastener. It is simple, not very expensive, very convenient in use and gives great freedom and comfort, and has this further to recommend it, that in case of fire all the animals can be liberated by one simple movement. We use this arrangement for turning the cattle out every day. In barns as long as ours—135 feet—we want passages between the ends, and the cows stand in sections of about twelve head, and we release all these in one section at once. The stables give a cubic air space of rather more than 1,200 feet each. You will learn the lesson by and bye that to make dairy products profitable the cows must be kept warm; and when you do that you will begin to get into trouble with your small, low stables.

Now, in another barn at Amherst we have adopted a different system which has much to recommend it. This barn is used for experimental work, mainly to test the questions whether it would pay better to use a little coal and keep the animals warm by artificial heat, or to shut them in a small, tight stable to breathe the same air over and over again. So I planned a stable with two small wings. Into one I introduced hot water pipes. In the basement is an inexpensive hot water heater. I endeavored to maintain a temperature of fifty to fifty-five degrees and let the temperature of the other stable vary from day to day with the weather. The temperature in the latter is very often below freezing, and once or twice has gone down to zero. We get more milk where the stable is warmed, but it is rather a singular circumstance that we get no more butter. However, I think this warming system will prove to be useful in another way. By having a little artificial heat we can get a greater circulation of air and manage with a smaller stable. We have at one end of this stable a box shaft with an opening close to the floor, and leading into the lower part of it we have a few hot air pipes. This causes the air in the lower part of the stable, where the carbonic acid gas is generally found, to flow up. This shaft runs through the roof where there is an Archimedian ventilator revolving constantly, which helps to promote the circulation of air.

I think when a stable is not very far from the house it would be possible to secure ventilation of the stable, at a very low expense, on this plan: I would set into the floor of the stable at occasional intervals a register, and leading from that register I would have a pipe made of sewer tile leading on a down grade to one of the chimneys of the house where there is a fire day and night. Then I would surround the chimney with brick or iron and let the lower end of the pipe communicate with the outer heat and I think the warmth of the chimney would create a draught and the foul air would be drawn down through this pipe from the stable and out through the roof of the house and you would never feel the expense. That is the true theory of ventilation.

CHEAPER PRODUCTION BY CO-OPERATIVE METHODS.

Mr. D. M. Macpherson, M.P.P., spoke on "cheaper production by co-operative methods." He said: In undertaking to give you a few characteristics of this important question I fully realize the great difficulty that is before me. When I reflect that in the past so much human effort and so much money have been used towards improvement, and when I see so little accomplished in that direction, then I realize how difficult it is to reduce the cost of producing any agricultural product in this country. The conditions are so difficult that any change will be slow.

Before I undertake to discuss this question it will be necessary to give some facts and figures as to the extent of the dairy industry and the amount of milk produced. The amount of milk produced in this Province for the manufacture of cheese is about 900,000,000 pounds. The amount of milk used for the manufacture of creamery butter is about 600,000,000 pounds, and of dairy butter it is claimed to be about 1,000,000,000 pounds, and for consumption in towns and cities about 400,000,000 pounds. This makes an aggregate of over 200,000,000 gallons as the entire milk production of the Province of Ontario. Estimating the milk as a fair average value for the past four or five years at about eighty cents per hundred pounds, we have $16,000,000 as the value of the entire milk product of the Province.

This being the value the next important question is, what is the cost?—and to find out the cost is very difficult. There are so many different conditions that we can only come to an approximate result. I have been figuring for the last ten or fifteen years. Taking the cost of milk production on my own farm and experience of other farmers in this and other sections of the Province, I find it very difficult indeed, to arrive at even an approximate idea of the cost; but so far as I have gone I find that the approximate cost of the milk, counting eighty cents a day for labor and wear and tear of machinery and interest on working capital at six per cent., makes the cost seventy cents per one hundred pounds, besides the soil fertility of ten cents worth in one hundred pounds. This brings us to the point that the cost of production is about eighty cents per one hundred pounds, and the value of the milk, taking this last year into consideration is not that amount. It is a serious fact for the consideration of every man who lives in this country, for if the products of a country cannot be produced for the value received for them what is there for the furture of that country? The cost of production must be reduced or disaster and ruin to all concerned are sure to follow if this state of things continues for time to come. More particularly is this the case when every indication points to still lower values in all farm products for the future.

Another important fact is that by making an estimate of the average cost of production fifteen years ago and at the present time, I find it costs more to-day to produce a pound of butter or cheese or milk than it did fifteen years ago. How is that result arrived at? I will try to tell you. I find that the cost of production is largely determined by the amount produced per acre or per farm. Now I find that land is less productive to-day on the whole than it was fifteen or twenty years ago. The average of hay then was one and

one half tons per acre; to day it is one and one quarter tons. The pasture crop now only gives 800 to 1,000 pounds of milk per acre; fifteen years ago it gave 1,000 to 1,200 pounds. Why such reduction? Just because there is less fertility in the soil, caused by the sale of farm produce from year to year. If the farms of Ontario lose annually in fertility two million dollars in dairy produce and one or two million in hay and grain, and one or two million in leakage and evaporation, this very large annual drain and loss of fertility from causes mentioned is having its effect in declined amount of crops and increased cost of production, and the cost of production with declined market values leaves no profit on the average for the farmer, and when this is experienced it has serious influences. One is that the price of land declines, and debts and mortgages increase to an alarming extent, and also many farmers are forced eventually to leave their farms, and the active ambitious young men, experiencing a poor prospective future, are by force of circumstances driven away to other vocations in city life which offer better inducements to make a competency. In this matter the country is reduced in population and resource, for the best young men leave for reasons as already stated. In confirmation of these results we have it proven by the last census of the Dominion, that there are 37,000 less farms and farmers' sons in the Dominion than the previous ten years' census.

It is a most astonishing subject to reflect on that although the different governments have been endeavoring for the past hundred years to help through societies for the promotion of agriculture in this country to the extent of many millions of dollars, yet we find the profits of the farmer cut down till there is nothing for him. It is something which should cause us to reflect. It is so important that men should rise in their might and see if something cannot be done to stem this terrible tide of depression which is coming over the agricultural interests of the country. I believe, as stated, that the value of farm products is bound to come down. There seems to be an over production all over the world. There are every year so many new railways and steamships to carry produce to and from different countries that it seems to me in the future there shall be still a reduction of market values in mostly all productions of the farm. And if this prediction be correct, and the resultant conditions from practises now in vogue are that there is an increased cost of production, making the turning point of yearly profits into yearly losses, and at the same time forcing down land values, and driving the population out of the country, thereby reducing profitable trade in all directions, at this stage of such disastrous results as described, I ask this all important question: Can the cost of production in agricultural products be reduced to a point sufficiently low to make a good profit on the prospective declined market values, and at the same time reduce mortgages and debts, increase the value of land and increase the population of the country and convert an unprofitable trade of the whole country to one of profit and general prosperity? I emphatically answer this question by saying, yes, it can; and I hope to see the day that many products such as milk, beef and pork, will be produced for one half the market value at the present time. How is this to be attained?

There are three things necessary to put into practise to accomplish these desirable results. The highest skill, sufficient capital and industrious labor. One of these we have already, viz.; industrious labor. I believe to-day there is no class of men on the face of the globe who work harder than the Canadian farmers. Their hours are longer per day, and their days are more per year, than those of any other class. Hence we have one of the conditions necessary to success. Have we the other two? Show me to day a farm carried on in the Province with the maximum of skill and ample capital to carry out the requirements of success to the fullest extent. We have lots of farmers who use more than sufficient capital, but the point is, is that directed by the highest human intelligence, the same as the business intelligence exercised in other pursuits? I am sure not. On visiting the paper mill yesterday we wondered to see the skill of these men in taking the coarse wood from our bush and putting it through a process by which it comes out a beautiful glossy sheet of white paper. In that line I see the highest skill, sufficient capital and industrious labor combined. What doing? Producing a profitable business. But in agriculture we find that in no instance is the combination carried out to the fullest extent. Now I believe that these are facts and I give them to you just as I have

observed them in the open walks of life, and if the agricultural interest is so important that the prosperity of every kind of industry depends upon it in this country, then why should it not be so important that we should apply the best principles to it in order to make it a success and produce the best results—to get the maximum of production for the minimum of cost? I do not see why we should not apply to it the same principles as are applied to the manufacture of paper or any other industry. You will find that the manufacturer so handles his products that between the cost of production and the selling price he will have a profit for his work. So in commercial, manufacturing, railroading and every other kind of enterprise, you see the same effective combination of skill, capital and labor in promoting development. You often hear the question asked why a change has not been brought about in agriculture? My analysis of the situation is this: The farmer is a hard working man and he can never get his work done. The result is he is a good worker, but a poor business man. Another thing is with regard to the reason why the farmers have not capital. The conditions are unfavorable to them. You find the banking institutions are got up largely in the interest of the commercial requirements of our country. Take a farmer who has 1,000 bushels of grain in his granary and wants an advance. The banker will tell him, "We do not do business in that way." But the grain merchant can get an advance on that grain, perhaps even while it is in the same barn. The working capital of the country is largely controlled in the interest of commerce, and not in the interest of agriculture, and if there is any want more than another in this connection it is banking arrangements in favor of the agriculturists, so that they can obtain money and associate it with skill and diligent labor—and then, and not till then, will we be able to reduce the cost of production.

What is skill in agriculture? It is the executive power of an individual to direct capital and labor so as to produce the maximum of results at the minimum of cost. It is science in its true form; it is business calculation in its best form; and it is application in its practical form. Let me give you an illustration of what science, skill and practice are. I will try to illustrate it by giving you a few agricultural facts, and scientific facts, and business facts, and practical and unskilful facts, and then a skilful fact. The analysis of all products of the soil is the same, but in different amounts and in different combinations. The products of the soil are divided into three divisions,—plant food, such as stable manure of all kinds; animal food, such as hay, grain, etc.; human food, such as milk, meats of all kinds, fowl and fowl products, etc. These are the chief subdivisions of agricultural products, and yet it is a scientific fact that their composition is of the same elements, but in different combination, such as nitrates, phosphates, potash, lime and carbon. These elements have the same value per pound in whatever product they are found, but the market value of this product varies to a large extent, and, strange to say, the market values of all agricultural products are but very slightly affected by the value of the elements which are contained in them. For instance, the value of the elements contained in one thousand pounds of stable manure is about one dollar, and the market value of this is about fifty cents. The same value of constituent is contained in three hundred and fifty pounds of grain, such as oats or barley, and the market value of such constituent in such grain is about $3.50. Here we see that one dollar's worth of constituent has a market value of fifty cents in stable manure and has a market value of $3.50 in grain, or a gain of seven times. And, again, the same constituent value of one dollar's worth that is found in one thousand pounds of stable manure and three hundred and fifty pounds of grain is also found in a thousand pounds of milk, and the market value of this is usually about $8 to $10; or, the one dollar's worth is found in three hundred pounds of fat pork, and the market value of this is usually $12 to $14. These mentioned human foods are raised in market value over animal foods three times, and in plant food twenty times. The practical fact to now find out is the lowest possible cost of converting fifty cents' worth of stable manure (1,000 pounds) into milk, beef or pork so as to be worth the highest market value of $10 to $12. It is not a difficult matter to find the cost of the constituent value, nor the market value, of any given amount of plant, animal or human food. The constituent values are easily made up by referring to tables

of analysis as given by such men as Wolf, Johnson or Leibig. The market value of any article in the three subdivisions named may be easily computed by referring to market quotations in the commercial reports of the country. But to attempt to give the cost of producing any given article of animal foods, such as hay, grain, roots, etc., and also any given article of human foods, such as milk, beef, pork, mutton, etc., is a different matter altogether. The cost of transforming one thousand pounds of stable manure into one thousand pounds of milk, or three hundred pounds of fat pork (live weight) varies in proportion to the intelligence and skill of the operator, location, situation, season, soil, climate, cost of land, labor, machinery, taxation, interest, etc. It is a matter of fact that each person's efforts in this direction determine for himself the cost of production, and no set of values of cost can be determined in a general way, unless in each individual case a full and complete estimate is made; but there are three ways of determining the cost of production in any given locality or county, which are: maximum, minimum and average, and even this can at its best be only an approximation. Take, for example, the Province of Ontario. The average cost of producing milk is about seventy cents per hundred pounds, estimating and basing interest at six per cent. and a man's wages at eighty cents per day. The minimum cost is (*and can be made general*) thirty-five cents per hundred pounds and the maximum cost $1 per hundred pounds. It will no doubt be generally admitted that he who produces milk for thirty-five cents per hundred pounds is a skilful farmer, and he who cannot produce the same amount for less than seventy cents to $1 can be fairly termed an unskilful farmer. These are facts, strange and remarkable though they appear. The question naturally arises from them, What bearing have they on agriculture? or, What benefit is it to a farmer to know these scientific facts and business computations in guiding him in his every day's work on the farm? Much every way, as it means in the one case unprofitable farming, declined fertility, reduced value of land, disappointments, discouragements, discontent, unhappy homes, debts accumulating, mortgages increasing, and a general prospect of disaster to individual, family and country. In the other case, it means profitable farming and all the usual benefits arising therefrom to individual, family, city and state, such as increased fertility to land, increased value to all kinds of real estate, increased population to county, town and city, increased and more profitable import and export trade, increased wealth to all, increased happiness and contentment in homes, and the bright, active and ambitious youth remaining in the country to assist in building up an industrious, flourishing and progressive people, to make the country advanced in all that is good and elevating.

Referring to the two distinct conditions stated, which are profitable and unprofitable farming, these two are largely determined by the cost of production, and that farmer who produces the greatest amount of value of produce at the least cost is skilful, and that farmer who produces the least amount of value of produce at the greatest cost is unskilful, in the general acceptation and meaning of the term. And hence, to obtain the greatest profit from farm work requires the greatest modicum of skill, and he who wishes to have the greatest skill in farming must be the most scientific, must be the greatest business calculator, and have the greatest executive power at the same time, to put into effect these desirable requirements. This may be fairly considered the analysis of skill.

Yet there is another factor necessary in carrying this skilful knowledge into effect, which is capital. All political economists, as well as business men in all walks of life, recognize the important effective power of capital when well applied and utilized. As it is in the commercial world a necessary requirement to have and to use capital, so it is just as necessary in the work on the farm, if not more so. Ample capital, properly directed, is a necessity with all successful farmers.

There is one more requirement to make and to attain the maximum of profit in farming operations, and that is, "Industrious labor." All farmers should be industrious and attentive in their every-day work, and in this respect the Canadian farmer fulfils one of the three requisites to perfection. But when an estimate is made under present conditions as to what extent the Canadian farmer applies the highest skill and sufficient capital in his operations on the farm to make them most profitable, he is sadly deficient. Indeed, it can be safely and truly stated that not one farmer in the whole of Canada

directs his operations with the highest possible skill, and at the same time with sufficient capital for obtaining the maximum of results from the minimum of cost—in other words, for giving the greatest average profit per acre of his farm each year, and leaving the farm in the best condition from year to year to enable him to increase his profits progressively in the future.

I have stated that high skill in farming pursuits requires a full control and acquisition of all the science known in agriculture, along with a correct knowledge of business principles and calculations. I have also stated that ample capital is necessary in all cases along with industrious labor. This combination in effective degree determines the highest possible profit in any one or all productions of the farm.

I shall now proceed to give a few practical illustrations setting forth, by way of comparison, the difference as to results from a given amount of land, basing the cost of production in all cases, interest on working capital at 6 per cent. and wages at 80 cents per day, with usual wear and tear. I will first give illustrations of the average cost of production and value of product from one acre of land in grain and pasture for milk, and also on a hundred acre farm, which will be a fair average for the Province of Ontario, which will be designated as unskilful farming. One acre of land as usually sown with grain, such as oats, peas or barley, costs, to prepare the land, supply the seed, harvest, thresh and market, with a small allowance for wear and tear and interest on working capital, about $10, and this along with the fertility value in the crop makes about $5.00 more, or a total cost of $15.00. The average product of such grain in Ontario is about thirty-five bushels of oats and barley and twenty five of peas, or an average value of $10 to $12, making a loss of three to five dollars on the one acre of land. On a 100 acre farm in Ontario, where grain, hay and milk are sold, the prices obtained will be about one cent per pound for grain, and 70 cents per hundred for milk. The total average cash sales are about $500 at present market prices. The total cost of same for labor, wear and tear, interest on capital, etc., etc., is about $500, and in addition there is about $100 yearly sold off in the shape of soil fertility, which in the transaction leaves no profit for land possession, besides involving a loss of $100 of soil fertility, and a similar amount, if not more, of land value.

Take another acre of pasture skilfully handled, which produces 5,000 pounds of milk or 6,000 pounds of pork. This amount of milk per acre can be produced for $12, and the cost of fertility in its disposal is $4.00 more, making a total of $16. This milk can be fairly valued at seventy cents per 100 pounds, including the value of the residue of whey or skim milk, or in all $35, leaving a profit of $19 for the acre to credit or profit of land investment.

Take again 100 acres of land skilfully worked with regard to the rotation of crops, to the growth of the most profitable crops, to cost of labor, to wear and tear, etc., and made to produce the greatest profit and leave the land at the greatest value. This 100 acres will give a gross cash yearly sale of produce amounting to over $3,000. The total cost to produce this in labor, ware and tear, interest on working capital, etc., will be not over $2,000, and in addition, where there will be about $400 worth of fertility sold off the 100 acres yearly, there will be $1,000 worth of fertility put back to add value to the land, and there will be prospective increased profits in the future. Milk can be produced in summer by this skilful method for less than thirty cents per hundred, and in winter for seventy cents. Pork can be produced in summer for less than two cents per pound, and less than four cents per pound in winter, live weight. Beef can be produced for not less than five cents per pound in summer, and less than two and a-half cents per pound in winter. The surplus cash of $1,000 being the profit realized for land investment, and the yearly increase of five or six hundred dollars worth of fertility added to the land, is a yearly re-investment of the profits into the business, to create increased cash dividends in the future, and at the same time add value to the land. This application of commercial practices and correct principles to agriculture, transforms declining fertility and thereby declined cash dividends and declined value of land from year to year, to just the reverse condition, which would be greater fertility, greater cash dividends and greater value.

The question can now be fairly asked and answered satisfactorily in the affirmative: If such profitable and satisfactory results can be attained by the combination of skill, capital and labor on 100 acres of land, can these same or similar results be secured on other farms or most all farms of this Province of Ontario? I emphatically say, yes. The process must of necessity be slow and tedious, particularly at first, but, when the principles are properly understood and tested, then the general progress would be rapid and forced to the extreme limit. If such increased results were to become general, it is a natural question to ask, What effect would such a doubling of the production, quadrupling of the values and reducing of the cost have on town and city populations, of railroads, shipping, banking, manufactures, and all other industries of the country? To try to realize that and describe the benefits would be beyond our capabilities. If all farmers had good profits and sold double the amount of produce, they would employ double the hired laborers; the laborers would be well paid, and they, along with the farmers themselves, would buy more and pay cash for all purchases. This would at once set the wheels of profitable trade in motion. The export trade would at once be doubled, freights would decline, and profits of the public carriers would increase, because it is a law that full capacity in freighting can be done cheaper and more profitably to the carrier. The producer would have the full benefit of the decline in freight rates. At the same time, where a larger and more prosperous population was developed, their wants would be larger and more varied. Hence the imports would greatly increase, and this again would be in the interest of the public carriers. Having heavy and full loads of freight both in the shape of imports and exports would assist again the producer to get his freight carried cheaper—both as regards what he wanted to sell as well as what he wanted to purchase. When a much larger carrying trade both in and out is experienced, more men are required to handle such commodities. In connection with this there would be a large increase of population in town and city, all of whom would be well paid for their services. Then where there is a large increase of working population who receive good pay promptly in country, town and city, this double increase of population with cash in their pockets starts manufactures of all kinds to work to supply the natural demands. This increased manufactures demands more laborers, and they, too, are well and promptly paid for their services. In this, again, we have increased and prosperous population, in the advantages of which the towns and cities participate in to a large degree. Here we have again the merchants taxed to their fullest capacity, with increased hands and increased stock to sell, which adds another section to the circle to enlarge the whole. So could be mentioned other developments as to the trade and population of the country and city.

There is one other important factor which must not be lost sight of and that is values. When and where profits increase all values increase; when and where profits decrease all values decrease. Where profits and prosperous population increase, there is a corresponding increase of values of whatever produces such increase of profits, such as farm lands, city real estate and buildings, stocks, bonds, railroads and shipping, as well as forest and mineral products. If double the value of all such mentioned possessions is produced by increased profits then we can safely say that while this lasts double the wealth is attained in country and city.

In the Province of Ontario the value of farm land, stock and implements is about $900,000,000, and the value of real estate in villages, towns and cities is about $300,000,000, making a total value of $1,200,000,000. There are over 22,000,000 acres of farm land, and 12,000,000 under cultivation. The yearly average value of crops produced—hay, roots, grass and grain—is about $100,000,000. The proportion of this amount that is sold is about $50,000,000, and about $25,000,000 worth of what is sold is exported out of the Province. The value of farm land in 1880 was about $680,000,000, and in 1894 it was $580,000,000, or a decline in value in fourteen years of about $100,000,000. The total crop value in 1881 was $116,000,000, and in 1893, $101,000,000, or a gradual decline of crop values of $15,000,000 in fifteen years. These statistics, as taken from the Bureau of Industries for the Province of Ontario, clearly prove that declined profits arising from declined crop values causes nearly a corresponding amount of decline in

farm land values. The increase of mortgages and debts has arisen from nearly $100,000,000 in 1880, to $200,000,000 in 1895. This also shows the decline in farm values, and increase of debts are about equal to the decline of crop value, or, in other words, accounts for this serious state of things, as is well-known and felt by nearly all people of the country. And again, the decline of real estate values in towns and cities of the whole Province is generally allowed to be nearly ten per cent., and this percentage of declined values on $500,000,000 of city and town real estate shows a decline of about $50,000,000. This makes a total decline in value, in ten to fifteen years, of farm lands and town and city real estate of over $200,000,000, the cause being clearly traceable to the declined value of crops as received from the soil.

How to remedy this very serious financial state of the whole people of our country is easily prescribed, which is to create a condition that will produce greater crop values at proportionately reduced expense, leaving yearly a greater cash profit and at the same time leaving more fertility in the land to enable it each year to increase the crop values grown and thereby increase the cash profits from year to year and so on, making a progressive profit and progressive values in real estate everywhere. While it is easy to prescribe a remedy that may be correct in principle in order to produce the result aimed at, yet to acquire the necessary conditions is a much more difficult task. After careful and long application of study and experiment to acquire and understand these principles, I confidently believe that the discovery has been made, not only of what the principles are but how they can be put into general practice by many farmers of this Province, to a greater or lesser degree, according to the conditions and environments of each individual. The necessary conditions for acquiring profitable results are, as previously stated, a combination of high skill, ample capital and industrious labor, and as the average Ontario farmer is industrious he does not lack in this one part of the requirement; but he is almost entirely deficient of high skill and ample capital. How to provide skill and capital so as to be effective in the hands of the ordinary farmer to obtain profitable results, I hold is entirely a national work, to be developed by public object lessons in many parts of the Province. To fully establish these object lessons will altogether likely take five or ten years. The best way would be to take a stated section of the country, for instance one township, and then one county, and publically test what benefits could be derived from a proper combination of labor, skill and capital. Should this prove effective this same procedure could and would be rapidly extended to all parts of the Province without trouble. I have, during the past five years, in this way, in several instances transformed a poor farmer into a good, industrious farmer, and a poor unprofitable farm of low value into a profitable farm, doubled the value of the land and paid a handsome cash dividend besides, and this was accomplished only by combining skill, capital and labor. I have already offered to make a public test in the Provinces of Ontario and Quebec to prove what can be done, and am still willing to undertake, under ordinary favorable circumstances, to publicly demonstrate that twenty per cent. can be produced from the present value of a poor farm inside of from ten to twelve years, and from that profit pay off principal and interest on $30 per acre of loaned capital, which would represent the necessary capital required to produce such profitable results. The value of this land would at the same time be more than doubled, not counting the improvements made by the capital invested at the beginning. I would also employ double the labor on this farm and would produce four times the ordinary crop value, reduce the cost of production more than one half and educate the owner so that he would be a skilful farmer and thereby be able to continue these results for time to come, so long as he continued to fulfil the three principles mentioned. In addition to the above results there would be $500 spent on five acres of public road, to also be an object lesson to show how the roads of the country could be built on the most permanent and lasting basis without any direct cost to individual or State. It will here be observed that there are about five acres of public road for every hundred acres of land, *i.e.*, three acres of front road and two acres of side road. Starting with an unprofitable, cheap farm, an unskilful farmer, small employment of labor and poor roads, and ending in ten years with a profitable farm of double value, employing double the amount of labor, quadrupling the crop value, building the proportion of public road that

this farm bore to the whole road at no expense to farmer or country, and at the same time making a skilful farmer, as well as producing all the resultant beneficial effects to trade and commerce, leaves nothing more to be accomplished. This public offer is still open, to be accepted at any time in the future, unless unforeseen conditions prevent its being carried out. I desire to here state that if such results can be obtained and made generally applicable, I see no reason why this question should not be of national importance and be taken up by the government of our country. If such can be accomplished, the sooner the better. Time is precious, as interest and principal on the many mortgages and debts of our country continue to roll up mountain high, and form a cumulative wave that, if not abated, sooner or later means disaster and bankruptcy to a great many living within the borders of our land. If millions of mortgages with interest can be paid off in each decade, and millions of value added to the real estate by adopting new methods and business principles without risk of loss of capital, prestige or credit, and millions of people added to the population, and the public roads built on a permanent basis, then it is high time for the authorities controlling the destiny of our country to stop spending millions on wrong principles and ineffective methods which never did and never will change our country's downward course. Would it not be sensible, businesslike, statesmanlike and humanelike to investigate and test better methods, and so attain the much desired results for the good of all our people and the world in general?

SECOND DAY—AFTERNOON SESSION.

The convention resumed at 2 o'clock.

BUTTER FOR THE BRITISH MARKET.

Prof. J. W. Robertson was the first speaker of the afternoon, his subject being as above. He said: I am to speak upon a subject which, while not very interesting in itself, is very intimately connected with the prosperity of the people of this part of Canada; and before I begin to speak on this theme, and while some of the audience are getting to their places, let me make one or two observations to you in Cornwall. On similar occasions in former years the farmers of the immediate vicinity where the conventions were held have turned out in large numbers to learn what might be learned about their own business and its management from those who have had opportunity for wider observation, and, in some cases, who have had longer experience than themselves. I do not wonder that many farmers have not availed themselves of the privileges of this convention, because farmers' institutes are now numerous and agricultural meetings of various kinds are frequent, at which the subjects dealt with by this Association and other practical details of farm work are discussed. At this convention, perhaps, the general policy of the Province in the matter of dairying may be said to be considered, and therefore the meetings, while not less important, may have less interest to the individual farmers than the discussions at farmers' institutes.

I am glad to welcome at this convention a distinguished American in the person of Prof. Brooks, whom you heard yesterday. About a year ago I had the privilege of going to the convention of the State Board of Agriculture of Massachusetts, where the people gave me a generous reception, not for my own sake so much as for that of those whom I represented.

Now, having taken as much time as I may in making these general observations, let me come down to my subject proper—"Butter for the British Market." The British people, as seen through their markets, are great eaters. That is their chief characteristic, and they talk about their food more than any people whom I have ever met. They do not confine all their talk to their food; still they talk a lot about what they eat. The British people have won for themselves a most distinguished place in civilization. In our little social circles we arrange those who sit at the table and those who wait on the table into two classes, and we think in our little way that those who sit at the table are a little better off than those who wait on the table. The producers of all civilized nations are to day seeking the privilege of waiting on the tables of Great Britain. Do not you go about the country in Canada thinking we are a little folk who do not amount to much. The people of the United States, France, Germany, Austria, Italy, Spain, Denmark, and all the rest of them, are the waiters on the table of Great Britain and are seeking the favor of doing it. We are a part of that Empire on whose table the peoples of the earth are waiting. We ought to have a rather better show in our mother's house than other folks. We have not been having it in the past, and I hope that in the near future we will be able to let our mother know that it is wiser and safer and better to get pure butter from Canada than oleomargarine from Holland or any other place; that it is better policy to plan to get her fruit and flour and meat from within her own borders than to leave other nations in a position to say, "we can starve you out if we cannot frighten you out." Canadians should say to Great Britain, it will pay you to get butter for your market from Canada and cheese for your market from Canada; and now is our chance to show that we can supply these things in plenty and of excellent quality and capture this market. I say this because now is the most opportune time to get some advantage, if only a preference on the part of the consumers, for colonial rather than foreign products.

The imports of fine food products to Great Britain in 1894 are shown in the following table:

British Imports, 1894.

	Value.
Animals, living (for food)	$44,237,455
Dressed meats	110,594,951
Butter	65,489,268
Margarine	14,818,075
Cheese	26,644,708
Lard	13,424,292
Milk (condensed and preserved)	5,252,277
	$280,461,026

The consumption of meats in Great Britain is now about 125 lbs. per head of the population, and of that quantity 38 lbs. per head are imported. The consumption of butter is about 15 lbs. per head of the population, and of that about 9½ lbs. are imported. The consumption of cheese is about 13½ lbs. per head of the population, and of that 5½ lbs. are imported. The table does not comprise all they eat of these things; that comprises all they buy from outside countries of these things; and seeing they buy so much of these it well becomes us to see how much we can supply with profit to ourselves. We send a very large quantity of good cheese that is quite creditable to Canada, but cheese is one of the smaller items on England's bill. If we could capture a like share of the others, you see how much we might increase our revenue. We send England about one-half of the cheese which she buys, but less than two lbs. for every hundred pounds of all the butter she buys. An increase of our butter production means an increase of the production of dressed meats, because we will use the skimmed milk and butter-milk to raise calves and pigs.

Great Britain obtains her supplies of dairy products from the countries shown hereafter :

	Butter value.	Cheese value.
Total	$65,489,268	$26,644,708
	Quantity cwts.	Quantity cwts.
Total	2,327,474	2,266,145
From Canada	20,887	1,142,104
" United States	29,996	672,347
" Denmark	1,102,493	.....
" Australasia	292,097	54,375
" France	424,645	52,969
" Sweden	266,306	.....
" Holland	165,157	298,693
" Germany	137,755	.....
" Other countries	135,999	45,657

Canada is well in in supplying cheese to Great Britain. She now furnishes over 50 per cent. of the total quantity imported there. That has been brought about mainly by the excellent quality and by the means which have been taken to get Canadian cheese and its quality recognized under its own name all the way through to the consumers. The Canadian trade in butter is a growing one, and the shipments of fresh-made creamery butter in cold storage compartments during the current year have given it a better name than it had been able to attain hitherto. A very large trade in that product is coming in the near future.

The little country of Denmark, which is not nearly so large as Ontario, and which certainly has not so intelligent a population, sends nearly half the butter that Great Britain buys, and this is the outgrowth of not more than twenty years' effort on the part of the Danish people. Twenty-four years ago they were not "in it," but afterwards attention was directed that way, and now they have the magnificent revenue of over $30,000,000 a year for butter sent to England, and have increased the export of dressed meats tremendously. They are among the best off people of all the nations of Europe.

Then, Australasia has come into the markets and sends an appreciable quantity of butter to England. People say to us sometimes, "You are too far off." We are not half so far off as Australia, and Australian butter comes fresh flavored and sweet into the British market. Distance is not so difficult to overcome as it is said to be. France sends more than Australia ; Sweden sends some and Germany sends some.

Let me next mention what are the essential qualities in butter which people are willing to pay a high price for. It is not correct to say the value of butter depends on the quantity of fat it contains, because you can have butter which is not saleable for three cents. a pound and contains just as much fat as another butter which sells for twenty-three cents. a pound. It is that sort of thing we call flavor that fixes the value. It is not the nourishing properties ; it is the satisfying properties. So flavor is the most important quality of butter. The flavor of Canadian butter when fresh made is superior to the flavor of Danish butter when fresh made—not merely equal to it. We have been modest as a people, and have said nothing, while the Danes have been getting the English papers to write up their butter because it was fashionable to do so. We have suffered, also, because the flavor was not nearly so good in our butter when it reached the English market as it was when made. Danish butter gets to the British consumer without any deterioration, so that it is just as good when it arrives in England as it was in the Danish creamery. If we can do what they do—get the butter from the place it is made to the place it is eaten without spoiling in transit—we can out-do them in the price obtained.

I need not say anything of the body of Canadian butter. It stands first in solidity of all the butters that go to the British market. It is too yellow in color to suit the British consumers. They will pay more for a light colored butter. Let us, therefore, make it the least little shade away from being a lardy color.

Then Canadian producers have been putting too much salt in their butter for the people of England, who like a comparatively mild and fresh, that is not salt, butter. Half an ounce of salt to a pound of butter is enough in most cases; and the salt should be of fine grain and pure quality.

Two things are objectionable in dairy salt, one is a coarse insoluble grain, and the other is a limy substance which has the effect of giving the butter a limy flavor.

I would use the finest Canadian salt. It is quite as good as the best I have seen anywhere, and better than I have seen in most parts of the Empire.

In some other respects our butter needs improvement. Butter does not taste any nicer for being in a nice package, but the Englishman thinks it will, and he pays for what he thinks, and not for what you or I think. I know a nice school girl about ten years of age, I suppose if she had a tawdry looking dress on, with her face unwashed and her hair all unkempt, she would be just as good a girl as when she steps to my side neatly dressed, with tidy hair and her face aglow with the bloom of restful cleanliness. Still I would not like to have her by me so well in one case as in the other. So the English shop-keeper, who does not care to have his shop tawdry, and is looking for a high class of butter, does not like to have his customers see a cheap looking lot of butter about his place. He says, "Oh, that butter in unsightly packages belongs to the low grade shops," and it has to go for a low grade price. Let us have clean packages, that look nice. Let us have a package, too, capable of keeping the butter without injury to the quality. The square packages, which hold fifty-six pounds, can be bought for sixteen cents. and lined with paper for not more than one and a half cents. a box. The butter in such packages can be packed closely in the refrigerator compartments on the steamships and no space is lost. That you may follow my argument and see the proof of it as clearly as I am able to put it to you, let me go back for a moment to the process of making the butter. When a buttermaker begins the manufacture of milk into butter he either puts in what he calls a fermentation starter or exposes the milk or cream to the air and lets things fall into it which start fermentation. The atmosphere is filled with all sorts of things that cause fermentation. That is a fermentation starter which changes sweet into sour cream, and by and bye, if left long enough, into decayed cream. Now, when the cream is churned and the butter is taken out of the churn, a small quantity of these minute forms of life are retained in it, and they go on working a change and spoiling the butter. So you have to deal with this fermentation starter. Now, if you have a fermentation stopper, you can hold the butter quite unchanged. Fermentation makes no progress at the freezing point of water, so if you keep the temperature down to 32° you have a fermentation stopper, and the fermentation starter will do no harm. If a pound of nice butter is made in the best way, and kept till it is two days old, allowing the fermentation to go on slowly to ripen the flavor, and it is then put down to a temperature of 32° and kept in a closely sealed package in a dark place, you can keep it for three or six months, and it will not have changed as much in that time as it would in three hours at a temperature of 75° in your pantry. So the difficulty of safe transportation is not great if you stop fermentation. If butter is made in June and kept at 32° in a dark place in a fairly close package, no man can tell in January whether it is three days or six months old by any difference in the flavor. That is what the Australians have been doing, shipping their butter 9,000 miles and getting it fresher to the consumer than butter sent thirty miles in a warm car in England.

Now, I come to this as being a thing we ought to do. We ought to make some provision for getting our butter to the English consumer in its best condition. That is the essence of the whole question. If you can do it you can capture his preference and his price. One thing more we want to do—we must get it there in our own name, so that people will know where it comes from and ask for it again—so we will work up a permanent trading connection with them.

That brings me to discuss the next part of my subject. If it be important to get the butter there in the best condition, then provision must be made for preserving it in that condition before as well as during shipment. What provision exists at most creameries? Well, they have a so-called cold storage room in the creamery. I have never been anywhere in a creamery where the temperature would stand at an average lower than forty degrees, with the single exception of the Renfrew creamery. What happens? The butter is put into the store-room or cellars at forty-five degrees, and the creamery man says: "I don't care to sell," and goes on making butter. "I will hold till the whole month's make is ready to sell," and the price is going up and the flavor is also going up (laughter). Being Scotch, the creed of my marketing efforts is to get the most money I can for what I have to sell. That is a different thing from selling every week, or not selling every week and putting the butter where it will spoil in the meantime. I have not said "Sell every week," but "sell when you like, and in the meantime keep the butter where it will not spoil." If a creamery cannot afford to have a cold storage room where the butter can be kept at a temperature of thirty-two degrees, let it be shipped every week to some place where it can be properly kept, and if it is to be held for an expected better market or for any other reason, let it be held there without deterioration. I do not think it pays a creamery now to have a large building for that purpose because the proper storage accomodation costs a good deal, and where the creameries cannot chill it themselves and keep it cold it will pay to ship to some place for that purpose. That requires, as a next step, accomodation on the railways by which the butter can be taken to these central or safe cold storage places every week. Now, last year, in connection with the cold storage system, we arranged for a service on the railways whereby a refrigerator car was run once a week for the carriage of butter. The creameries of Quebec used these cars quite largely, so that the Government guarantee on some of the routes was not called for there at all. But over the Province of Ontario the cars were used very, very little, indeed, and butter was held until the flavor was partly spoiled, while these cars were running empty most of the time. We gave the same chance last year for shipping dairy butter as for creamery butter in this way, and dairy butter did better too where shipments were made up promptly. Let us get this into our heads, that butter begins to change in condition after three days if kept above thirty-two degrees, but if you keep it at that temperature then you can hold it any reasonable length of time. We propose to continue the cold storage service this year, and I hope the creamery men and merchants over Canada will see that their butter is put in a safe place before it begins to spoil, and it will get us a good name instead of a bad one, and we will find our entrance to the British market easier and more profitable to ourselves.

That brings me to one of the last parts of my subject. I want to try to make clear what a market means to the man who has butter to sell. What is a market? It is a place to exchange in. It used to be that a man would exchange furs for blankets and bacon, etc. Nowadays by the medium of that which we call money we do not make the exchange of furs for blankets and bacon. The process is different but the end is just the same as before, and so when a man has a tub of butter to exchange for something else, he has to recognize two things: First, that the butter has an intrinsic value as food that does not change much. A tub of butter in June has the same intrinsic value as a tub made in July if it is made well. If it is not it does not gain in value although it "goes on from strength to strength continually." Now, while the intrinsic value of the butter, if preserved, remains the same, the exchange value fluctuates all the time. I may get $10 for a tub to-day for which I might get $8 or $12 two months hence, and that is where skilful commercial "gumption" comes in, which we have not got any too much of just yet in this country. I am not taking the record of one year only to support a theory, because the fluctuations last year were almost the same as for the last ten years. I am taking the best butter first. The Normandy butter from France stands away above the Danish butter. We have in Canada the conditions for making butter just like the French butter. Our flavor and body are more like theirs than any I have seen. These are the prices in 1894: In July the price was 115 shillings for 112 lbs. It went up in January to 145 shillings. Take the price of nine or ten years, and from November to March it is

about six cents a pound above the price of the rest of the year. Does that not mean that we ought to try to exchange our butter at a time when it has a high exchange value, or in other words, when it sells at a high price per pound. It is as clear to me as noonday. Why should I exchange something which I have when its value is lowest? Of course I do not want to, and will not when I can help myself. Then, take the Danish butter. There seems to be a uniform fluctuation upwards to October sustained to March, and then the price goes low again. That means we should have our summer butter made in June, July, August and September, kept in safe, cold places, and sent to Britain in October, when the demand is best and the price is comparatively high for that class of butter.

To do that we need cold storage somewhere accessible to the creameries. There are now three large buildings in Montreal—or will be next summer—where cold storage can be had at any temperature, from twelve degrees upwards, for very reasonable rates. Last year, to encourage the creamery men to store their butter which was to be held, the Government agreed to pay half the charges. That may be continued this year. Then there have been cold storage services on the railways and steamships, which will be very much improved. Last year we had cold storage on the steamships which kept the butter after it was taken on board. We used insulated compartments, and they did very well. It was like a log-house in the woods, which served the purpose first-rate until the people were ready for something bigger and better; and if a settler had built a mansion in the woods in the first place he would not have stayed long in it. So we began in a simple, inexpensive way, and there was no failure. But now the time has come when we should put refrigerating compartments on the steamers. On one line of steamships at least it is expected there will be cold storage accommodation for the carrying of dressed meats, cheese and fruits at suitable temperatures, so that they may be landed in the English markets without any injury.

One thing more needs to be considered. If gotten to the other side in first-class condition our butter needs to be made known in its new condition under its own name. Somehow Canadian butter has received a bad name, and it is not easy to recover from the incubus of that. It is needed to call the attention of the British people next summer to the fact that we are giving them butter of a different character from what went from Canada in the past.

A little talk is sometimes indulged in by those who perhaps do not follow the bearings of this question in its entirety, to the effect that if any man holds butter which he has bought from June till October, he thereby becomes a "speculator," and by throwing that epithet at him they suppose they have altogether discomfited him. I am not an apologist for speculators, but a man who buys on speculation merely proves his faith in the future of the market for his purchase. So if a man buys butter for his own good money in June and holds it till October he has faith in the market, and is a good factor and not a bad factor in the market. Take our cheese trade; the factories are only making on the average five and a half months in the year, and the consumers eat cheese in England twelve months in the year. If the Canadian buyers sent it all over in five and a half months it would be cheaper there; in fact, might be unsaleable. Legitimate and *bona fide* speculation is a good factor in commercial life, and when I meet a farmer who has the notion that a speculator has always an injurious influence on his business I differ from him. I favor new methods of trying to help the farmers to get our products to the market in the best way, and I would brush aside every middleman who stood between to hinder the producer from getting his rightful share of what the consumer paid. (Applause.) But if you have no middleman between you cannot get the other two together. The buyer who helps in the transaction is entitled to get his share. In that sense let us get our butter to the British market through the regular commercial agencies, trying to get it over in a safe, unspoiled condition, giving an equal chance to the merchants who use their courage, skill and capital, and to the manufacturers to increase their profits. (Applause.)

Mr. GRAHAM: Will not this butter which you keep at thirty-two degrees depreciate very much in flavor once you get it into the retailers' hands?

Prof. ROBERTSON: No. Let me show you how that is. Everybody says if you freeze beef, so soon as it thaws it spoils. When you freeze beef, the cells, which contain protoplasm, are burst, and when it is thawed the juice runs out and it spoils. If butter be kept so cold that the brine in it becomes frozen the butter will be opened by the expansion of the brine, and thus the air will be admitted; but in order to bring that about the brine must be frozen. Unless the brine is frozen the butter is chilled only and not frozen. The chilling does not open up the grain to let the air in, and consequently it is no more liable to spoil afterwards than if it had not been chilled.

Mr. MACPHERSON: What temperature will the brine freeze at?

Prof. ROBERTSON: The strongest will freeze at zero (Fahrenheit), and the weaker brine at perhaps fifteen degrees below the freezing point of water.

Mr. MACPHERSON: You would not have it below fifteen degrees?

Prof. ROBERTSON: I would not bring butter below thirty-two degrees only for a short time, when it may be brought down to twenty-two degrees, in order that the inside of the package may get cold quickly.

A VOICE: Do these packages hold brine?

Prof. ROBERTSON: When well lined with two thicknesses of parchment paper.

Mr. MACPHERSON: Is it necessary for these boxes to hold brine?

Prof. ROBERTSON: I do not think it is really necessary, because if there is paper covering the butter there is practically no evaporation at thirty-two degrees. It does not pay to buy thin, cheap paper which sticks to the butter. It pays to buy thick, strong paper. The Australians are wise in this, that when the paper is taken off the butter has all the sparkle that it had when just two days old. The paper keeps the moisture in.

In answer to a question by Mr. ALEXANDER, of Montreal, Prof. ROBERTSON said: The inspectors of food in Great Britain are very diligent, and when butter is found there that contains anything over eighteen per cent. of water the grocer caught selling it can be taken up and fined for adulteration. I have never known of butter being sent from Canada that contained so much water as that, but I have heard of some that came dangerously near it. The butter should be worked twice. It would be a most injurious thing if even one tub of Canadian butter should be found which would give rise to an action in England, because our competitors would have the fact published everywhere. If worked twice at fifty degrees there is no danger of that.

Mr. PEARCE: What about butter driers?

Prof. ROBERTSON: I have never seen them in use. If the ordinary butter-workers are used twice there is not the least risk of leaving too much water in the butter.

Mr. ALEXANDER: Is there not a danger of leaving it too greasy?

Prof. ROBERTSON: The butter-maker can tell when he folds the butter on his butter-worker when it is worked sufficiently. If it will fold over about half before it breaks it is in the best condition.

Mr. MACPHERSON: Perhaps you have a preference for butter-workers.

Prof. ROBERTSON: I have not. It may be a prejudice, but I like to have a butter-worker by which a butter-maker feels the grain of the butter through the way it bends or yields to the butter spades in his hands. He gets more information through his muscles than through his eyes.

PRESENTATION TO MR. MARK SPRAGUE.

At this stage of the proceedings a pleasing incident occurred which was not down on the programme. It was the presentation of a handsome gold stop-watch by the Association to their efficient instructor, Mr. Mark Sprague. Mr. Sprague having been invited to the platform, the presentation was made by Prof Robertson on behalf of the

Association. In doing this Prof. Robertson said: I have been asked to make a few remarks for Mr. Sprague's especial benefit—not of a scolding kind—but on behalf of the Association, in offering to him a tangible token of their high appreciation of himself and of the labor he has performed so faithfully for the creameries of the Province of Ontario. This Association, unlike many other corporate bodies, has a soul (laughter and applause), and when a man serves a corporation whose directors have large souls, great hearts and broad minds, he is inspired and impelled to good service. In this respect a servant usually reflects the spirit of his master. So, on behalf of the Ontario Creameries Association, I have pleasure in presenting you with this beautiful gold stop-watch, which will enable you to time the speed of separators, and otherwise aid you in your work while you watch over the interests committed to your care. While valuable in itself, I think it will be still more precious to you as the vehicle which bring to you the respect and good will of the members of this Association, which is doing so much for the country. I know, as the chief officer of the dairying service of the Dominion of Canada, that I am only giving voice to the opinion of this Association when I say that Ontario owes you a debt of gratitude for faithful, unselfish service; and let me express the hope that through your example many of Ontario's sons may be awakened to give her their best service in the fields of dairying and agriculture. (Applause).

Mr. Sprague was deeply touched, and replied very briefly as follows: This presentation is very unexpected by me, I assure you. I have labored to the best of my ability for a number of years, and a token of this kind is very much appreciated by me. I thank the President and Directors of the Ontario Creameries' Association, and one and all of you, for this very valuable present. (Applause).

INJURIOUS INSECTS.

Mr. James Fletcher, Dominion Entomologist, Ottawa, was next introduced, and said: The subject I am going to speak about to-day is "Injurious Insects." These creatures from year to year reduce your incomes, sometimes without your knowledge, to a large extent. I will speak on this subject for about twenty minutes of the half hour at my disposal, and then will leave ten minutes for anyone who wishes to do so to ask questions. I think in this way that any information I can give will be more definitely directed to those kinds of injurious insects which are immediately of interest to those present. I might speak of many insects which were of general interest, but which were not troublesome to you, but if I confine my remarks to general principles I can speak of the various kinds of injuries committed by insects and the best remedies for the different classes; then if when I am finished you will ask questions about those which have occurred in this district I can answer better with regard to each one's requirements. There is no doubt that a very large percentage of all farm crops is destroyed each year by injurious insects. From the best information available this loss must be put at no less than ten per cent. of all crops grown, and this amount is actually less than it really is in many years. The plain English of this is, that if you grow a crop worth $1,000 you lose every year $100 of that amount. This, too, is a direct tax which is frequently paid without a complaint by the farmer because he thinks he cannot help himself, which, however, is not the case, for with a small amount of knowledge a very large proportion of this loss can be prevented, and if I impress nothing else on you to-day beyond the fact that you have in me a servant who is being paid to study injurious insects for you and find out the best remedies to prevent their attacks, I shall consider my time has been well occupied.

There are perhaps about one hundred different kinds of injurious insects which every year cause serious injury to crops in some part of Canada. These, of course, do not occur in the same locality, but complaints are received concerning them from some part of Canada

every year. It is encouraging to know that of this number of what we may call first-class pests by far the larger portion have been sufficiently studied for the recommendation of practical remedies immediately upon the attack being made known. The secret by which remedies can be discovered is to know the life history of the insects which cause the injury, so that we may be able to attack them at that stage of their life when they are most susceptible of injury. The life history furnishes us with the knowledge of how they pass their lives and at what times of the year they are passing through their different stages of development. Perhaps it is hardly necessary to state here that all insects pass through four stages of development; first, there is the egg, which is laid by a female insect. From this egg hatches the second stage or larva, which, in most insects is the stage in which the greatest amount of injury is done. In the different orders of insects we find various popular names for this stage. The larva of a fly is called a maggot; of a beetle or a wasp, a grub; of a butterfly or moth, a catterpillar, and so on. It is sometimes rather important to prevent mistakes that an insect should be called by its accurate name when speaking of it, but if specimens of all insects concerning which enquiry is made are sent forward with the letter there is little chance of error. In this country nearly every small member of the animal kingdom of which the name is unknown is called "a bug," whereas as a matter of fast this name properly belongs to a very small order of insects, which are for the most part characterized by a very nasty smell, but particular by having the mouth parts in the form of a slender, hollow tube.

An important point about the structure of insects which it would be well if every farmer in the country understood, is that the mouth parts of all insects are formed upon one or other of two plans. If a large number of insects, no matter how many, were examined, they could all be divided under two heads. First, those which have jaws with which they bite the substance of their food, such as the Colorado Potato Beetle, all kinds of caterpillars, currant and cabbage worms. In the case of all these, it is quite apparent by the riddled leaves that much of the substance of the plants attacked has been eaten away. The other class has the mouth parts in the shape of a slender, hollow tube, such as we find in the mosquito and all the true bugs, many of which attack plants. These all live on the liquid juices of animals or plants, which they suck up through a hollow tube. The importance of this much knowledge to farmers is due to the fact that all remedies for injurious insects must be devised in accordance with the nature of the form of the mouth parts of the insects which are attacking his crop. For those insects which eat the substance of plants, it is plain that if some poisonous material is placed on the food plant, it will be eaten by the insects at the same time as the leaves, and the insect will be poisoned. On the other hand, however, for those kinds which simply live on the juices of the plant, this remedy would be useless, for the attacking insect would push its slender beak in between the particles of poison, puncture the plant, and suck out its juices from beneath the skin. Too much importance cannot be laid upon the value of this knowledge, and the first thing to look for when you notice that a crop is being injured by insects, is to observe how the injury is being done. From the great utility of Paris green as a remedy for all insects which bite their food, a general idea seems to have sprung up that Paris green is a remedy which can be used for every kind of insect. This, however, is far from being the case, and it is important that the fact should be known, for very frequently when farmers take the doctoring of their injured or diseased crops into their own hands, they use the wrong remedy, and then get discouraged and adopt the false notion that very little can be done to prevent the attacks of insect pests. There are, as I have said, two classes of injurious insects—*Biting insects* and *Sucking insects*. For the first class, Paris green is the most generally useful material, but for the second class we require a different kind of remedy altogether, viz., some substance which will destroy the insect by merely coming into contact with their bodies, and which does not require to be eaten at all. There are several materials which answer this requirement. I have stated that the number of first class pests which occur every year is only about one hundred, and of these a large proportion, perhaps ninety-five per cent., have already had practical remedies

discovered for them. We may ask, what is a practical remedy? A practical remedy is one that is, first of all, effective, so as to do the work we use it for; then it must be cheap, so as not to cost more than the crop is worth, and lastly, it must be simple, so as to minimize any chance of error in its composition or application. Remedies are either preventive or active, and the first of these can again be divided up into agricultural and deterrent. Agricultural preventive remedies consist of such methods as high culture, by which a vigorous and healthy growth is encouraged, and the crop is pushed on to maturity as soon as possible. Clean farming, by which all weeds are kept down and no rubbish is left about to act as winter shelters for insects; early or late seeding, so that a crop liable to attack is presented to its enemies at the time they usually appear in such a condition that they cannot injure it. Rotation of crops is also of great value as a means of keeping down the numbers of injurious insects. Every crop has its own special insect enemies, and if large areas are put in under one crop, or if the same crop is grown in the same place for several years running, these special enemies will increase year by year. By proper rotation of crops, insects feeding on one class of plants do not find the same food plant in the same place the following year. Deterrent remedies include all such operations as the painting of the trunks of fruit trees with poisonous alkaline or other obnoxious washes. A widely adopted remedy of this nature is the regular painting every year of the trunks of apple trees with an alkaline wash made of soft soap reduced to the consistency of thick paint by the addition of a strong solution of washing soda in water. This is put on apple trees at the end of May and in the middle of June, and forms a thick coating not easily washed off with rain. Other deterrent remedies are the many kinds of mechanical contrivances put round the trunks of trees to prevent insects from crawling up them. This remedy is used to prevent the wingless female moths of the canker worm from climbing up apple trees to lay their eggs. Another method of keeping insects away from vegetables or animals is to destroy or mask the natural odors of the plants with some other substance which has a strong or disagreeable odor, such as gas lime, coal oil or carbolic acid. The remedies most usually recommended are active remedies, and include not only such operations as may be spoken of under the head of hand-picking, when the individual insects are sought out and destroyed, but also the application of the various kinds of insecticides or other poisonous substances which, during the last few years, have come into use so widely. Nearly all the insecticides may be used either as dry powders or as wet mixtures. In the case of Paris green and other arsenical poisons of a caustic nature, it is necessary to mix them with some diluent before they are applied to tender vegetation. For dry applications, almost any dry, fine powder is suitable—flour, land-plaster, air-slaked lime, finely sifted wood ashes, or even road dust. The only important thing is that they should be perfectly dry and in a fine state of division, so that they may be evenly distributed over the plants as a very fine powder. The proper quantity of the different diluents to be used with the insecticide will vary with the insects to be treated, and the plants to which they are applied, but in most cases, if Paris green be used, it may be mixed with fifty times its measure of the diluent. There are a great many different kinds of instruments for distributing dry poisons, but perhaps the most convenient thing is a small bag of muslin or cheese cloth, from which the poison can be conveniently shaken by tapping it with a slender rod. Undoubtedly the most convenient way of of distributing poisons is in water, by means of a spraying pump provided with a good spraying nozzle, and this latter, it must be remembered, is quite of equal importance with a good spraying pump. During the past two or three years the value of spraying nearly all crops for their protection from their insect enemies has been widely recognized, and to-day the progressive fruit grower, gardener or farmer who does not spray his crops is certainly neglecting one of the most useful aids to successful competition with his neighbors. I have mentioned Paris green, and this I believe to be the most useful of all the arsenical poisons. It is always obtainable, and its nature is now pretty generally understood, so that there is little chance of mistake in applying it. In fact, I consider Paris green almost an ideal material for the purposes for which it is recommended, for poisoning biting insects. Its intense green color advertises its poisonous nature. Although so poisonous, it is quite insoluble in water; that is, it will not

dissolve in water, and it is only when acted upon by the gastric juices in the stomachs of insects which eat it that its poisonous qualities are released. This takes some time, and it is well to mention that Paris green is a slow acting poison, and if results are not seen very quickly after its application, farmers must not be impatient, but wait a little. I have frequently seen it applied to potatoes for the potato beetle, and because the beetles were active the next day, I have been told that Paris green was no good. I have always said, "Wait till to-morrow," and in all instances the result has been satisfactory. Paris green does not dissolve in water, and when we use it in water it is merely a mixture, the poison being contained in the water simply in suspension. This must be remembered, and I mention it here because my attention has been drawn to the fact here to-day that some farmers are in the habit of mixing Paris green in a pail of water when they go home to dinner, and then leaving it to stand until afterwards to be used in the afternoon, thinking that more strength will be taken out of the poison, and upon enquiry I find that they have not recognized the necessity of keeping the mixture stirred up all the time. In anticipation of the many qusstions which are sure to be asked at this meeting in the same way that they are in every other meeting that I attend, as to "What is the best remedy for the potato bug?" and "Haven't you got anything yet that will keep down the potato bug for us?" I say, "Yes; Paris green." This is the only practical remedy, and is so effective and cheap that no one need ask for a better until the millenium comes, when, perhaps, we may not have to work hard to get satisfactory results.

For sucking insects, such as plant lice, scale insects and true bugs a most valuable remedy is a mixture of coal oil and soap suds now widely known under the name of kerosene emulsion. The best formula is coal oil, two gallons; rain water, one gallon, and any kind of soap half a pound. Boil the soap in the water until all is dissolved, then while boiling hot turn it into a large vessel holding two gallons of coal oil, churn it vigorously for five minutes, when it will be of a smooth, creamy nature. If the emulsion is perfect, it will adhere to the surface of a piece of glass dipped into it. If not sufficiently churned it will run off as though on an oily surface. This is the stock emulsion, and before using it on vegetation it must be diluted with nine times its quantity of water. It may be sprayed upon all kinds of vegetation in this strength and will do no harm, but will destroy all kinds of insects upon which it is sprayed. This mixture was used very satisfactorily against the Horn Fly, which was so troublesome in many parts of Canada up to last year, but which, from what I have been able to learn of its habits, will certainly decrease in numbers and the virulence of its attack from this time forward in Canada. There are many kinds of insects which I might speak of, such as the apple tree borers, Codling moth, plum Curculio and turnip flea, but it will perhaps be better to carry out the plan I suggested and answer such questions as may be asked with regard to the different kinds of crop pests. In addition to the injuries committed every year by injurious insects, farmers suffer an equal amount of loss annually from the attacks of many kinds of parasitic fungi, such as potato rot, rusts, smuts and mildews and particularly the black spot of the apple and the mildew of grapes. Bulletines and reports have been published upon all of these subjects by the Experimental Farm at Ottawa, and also by the Department of Agriculture in Toronto. Before sitting down I would remind you all that any information concerning your farming operations can be obtained from the Experimental Farm at Ottawa by writing for it. Special arrangements have been made by which letters and all parcels of specimens for examinations can be sent free of postage, and I can assure you that all the officers at Ottawa in charge of the various department will do their utmost to assist you with any information at their disposal.

The PRESIDENT: What is the cause of scab on apple?

Mr. FLETCHER: Scab or black spot of the apple is due to the attack of a parasitic fungus. This has been treated of at some length in Bulletin No. 23, of the Experimental Farm series, where it will be found that a satisfactory remedy has been discovered in the Bordeaux mixture, which for the apple is recommended to be made with four pounds

of copper sulphate, four pounds of lime and forty gallons of water, but which when sprayed upon the potato vines for the rot has given rather better results with six pounds of copper sulphate, instead of four.

A Voice: What causes it? Does planting the trees too closely?

Mr. Fletcher: Certainly that would be the cause of a lack of vigor and health in the trees and might aggravate it. The cause is just as certainty a distinct organism which is propogated by spores and carried by the wind from tree to tree.

Mr. W. H. Byer: How can blackbirds be prevented from attacking the corn in the spring of the year?

Mr. Fletcher: A great many adopt the plan of rolling the seeds in tar before sowing, others think this is of no use. Our foreman has a method by which he claims he can keep crows away. He poisons a few eggs with strychine and leaves them in the fields and when one crow has eaten any of this poison and dies he leaves it in the field and no other crows will come, so he says.

The President: The way my father told me was to get up early in the morning and keep stirring the dirt right around the hills of corn. (Laughter.)

Prof. Brooks: I think, perhaps, I can help a little on the point with reference to applying Paris green. There is a little implement known as Leggett's paris green sprinkler, which you fasten by a strap over the shoulder and by turning a crank you can apply the Paris green as fast as you can walk. We use the machine with great satisfaction, putting on the Paris green to one row at a time, and, with the minimum of exercise, a man can do about six to eight acres in a day. It reduces the Paris green to a sort of mist which does not burn the leaf, and we have found it the most satisfactory way. If you add flour there is so much more body to deal with, and whether you use plaster or water the same is true.

A Voice: Can you give some remedy for smut in wheat, corn and oats?

Mr. Fletcher: The smuts in wheat and oats are very similar and can be prevented by an application of one pound of bluestone to two and one-half or three gallons of water. This is explained in the Experimental Farm reports and bulletins. Smuts in corn is a different disease, and very much harder to treat. There is no remedy which has been invented.

THE ORIGINAL FORMS OF DAIRY PRODUCE.

Mr. Frank T. Shutt, M.A., Chief Chemist, Dominion Experimental Farms, Ottawa, was again introduced, and on coming forward said: No apology, I feel sure, is necessary in these later days, and especially in speaking to an audience composed of the members of the Creameries' Association, in presenting to you this afternoon a few thoughts upon the fundamentals of agriculture from a scientific, and more particularly from a chemical, aspect or standpoint. I fancy that now-a-days all our progressive farmers have realized that a complete study of their work is necessary and essential to profitable farming. It is so in every other business and profession, and we in agriculture have lately come to see that such is essential to our work.

I am to speak somewhat in technicalities, but I shall endeavor to make myself plain and easily understood. If mottoes are not copyrighted I should like to give you one, "Science with Practice." Such a motto indicates the lines upon which we as individuals and as an Association must work in the future. The science of agriculture tells us of the why and wherefore of our farming operations, and of the fundamental principles which underlie them, a knowledge of which is necessary for the intelligent conducting of our farm work.

I shall treat my subject under three heads. Regarding the original forms of dairying products we may ask: What are they? then, Where are they? and then, Why should we endeavor to learn about them? But it may not be amiss if we first reflect upon the relation of the farmer to his products, if we consider that it is the farmer who, by his skill and intelligence, directs the conversion of crude materials of plants and animals into finished products. He uses the agencies which nature has provided—plants and animals—and just in so far as he understands the requirements of plants and animals just so far will he be able to economically, intelligently and profitably conduct his work. Both in the production and selling of our goods we have to compete with men who are keen, and whose knowledge and means of transit of goods are often better than our own. To meet them here or elsewhere it is necessary to be alive to all methods of progressive farming, and further, to remember that progress and development in agriculture have been made through the exact knowledge afforded by the sciences. Chemistry has given us the Babcock test, which revolutionized our old method of testing milk, and put the sale of milk on an equitable basis. The science of mechanics has given us the separator, which enables one to skim milk more closely than by any method of deep or shallow setting. The science of bacteriology has given us the knowledge of the presence of bacteria or microscopic plants which lead to the development of the right or wrong flavor in butter and cheese, for we know that it is the presence of certain bacteria which by their development produce in butter and cheese a condition which we might call "off flavor."

I think it is remarkable when we compare the condition of agriculture of a few years ago with that of to-day, and reflect upon the little knowledge that was then prevalent with regard to these matters, and recognize the immense strides that have been made during the last decade. I think there is cause for congratulation and very much satisfaction, and I feel sure from what we can see to-day that as Canadian agriculturists we are not, and have not been, slow to avail ourselves of the discoveries made by those engaged in the more scientific part of agriculture. Of late there has been an effort, and a successful one, to place agriculture on a plane with other sciences. Dr. Gilbert, the first authority in England, said last year that the only hope for the future of agriculture lay in the larger adoption by our people of scientific methods. If this is true for England it will also, though perhaps not quite to the same degree, be true for Canada. This, remember, is the warning of a man who has a practical and scientific agricultural experience of more than fifty years. When we have such an expression from so high an authority, we may well see to it that we take every opportunity to gain information, and then endeavor as far as possible to make use of it upon our farms.

Now, it is a fact, about the truth of which there can be no doubt, although most of us have not the opportunities for making the observation for ourselves, that everything is changing. We ourselves are not composed of the same materials that we were some years ago. We may not see this change of material, but the scientist by careful methods of investigation may measure it.

The term matter as I shall use it, is anything that can be weighed. It may be in either one of three conditions. It may be either solid, liquid or gaseous. You say, is air matter? Certainly. If you take a vessel, such as a flask and weigh it and then exhaust the air, it will be found to weigh very much less. The air that the flask contained consequently had weight. The matter in this universe is constantly changing from one to another of these three conditions, and these changes are brought about by various causes, and very largely by the life functions of plants and animals. You say, are plants alive? Certainly, for they breathe, they require food, they reproduce. Plants are living organisms just as much as animals are, and we should do well to recognize that fact, it will help us in our practical agriculture—in the economical manuring of the land.

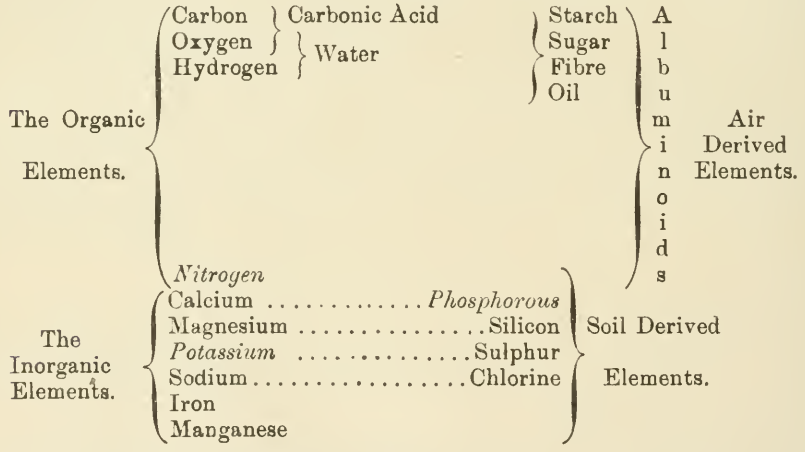
I have to make another statement with regard to matter, and that is that the farmer cannot create it or annihilate it. The sum total of the matter in the universe remains the same. You say to me when I put a stick of wood in the fire I get nothing after it is

burned but a few ashes. Is there no loss? Apparently so, but nevertheless there has been no loss, no annihilation of matter. It has changed its form. Part of the wood has been transformed into gaseous products, and if the operation had been performed in the laboratory we could have weighed them and shown that there had been no loss. So in one sense we may understand the farmers to be manufacturers, who, by the aid of plants and animals, convert the crude materials in nature into many forms useful for food and clothing. Just in so far as the farmer has skill in directing these changes just so far will his work be economically and profitably accomplished.

When a chemist examines matter, solid, liquid or gaseous, he finds that it is made up of certain fundamental forms known as elements, and that all matter in the world is composed of one, two or more of these elementary substances. As we meet it then in nature, matter is either elementary or compound, for the elements combine with one another in various proportions. There are some seventy or more of these elements. We as agriculturists have to deal with a few of them—some sixteen in all—and in relation to the plant food in soils I need only speak particularly of three.

Let us begin with the consideration of those elements which enter into the composition of the plant, because, as we shall see that the plant is an intermediate stage between the soil on the one hand and the animal on the other. From our standpoint plants may be said to have their special function in preparing food for the nourishment of animals. On this chart we have printed for us the names of those elements which go to make the matter of which plants are composed—carbon, nitrogen, oxygen and certain others.

PLANT CONSTITUENTS.



You will notice we have classified them under two groups—organic and inorganic. These then are the elements which in various combinations make up the tissues of plants, and since animals live on plants we find in them the same elements. Plants do not make or create anything; they only take up and convert matter taken in as food from the soil or atmosphere, or in the case of animals from plants. The particulars and data of the above chart were then discussed in detail.

Carbon is well known to you all, in the form of charcoal. It also occurs in the from of the diamond. Oxygen is a gas which is colourless and odourless, and exists in the atmosphere and in water. Of the former, it is one-fifth by volume; of the latter, it is one-third by volume. Oxygen is the great life-supporting element of nature. Without it there could be no animal life, no combustion. Hydrogen is not found in the atmosphere (except in the aqueous vapor present), but combined with oxygen is a chief constituent of water.

Nitrogen is a gas found associated with or mixed with oxygen to form the air. Four-fifth of the air is nitrogen It, like oxvgen, is colourless and odourless. The nitrogen in the atmosphere, however, has a different function to that of the oxygen. Oxygen is a gas which supports combustion, and enables us to use our food as fuel for keeping up the vital heat. Nitrogen, for the most part, appears to have for its chief function in the atmosphere the diluting of the oxygen.

We shall see, however, that nitrogen in combination is necessary to both plant and animal life.

Mineral Elements. With regard to the inorganic or mineral elements, we may say at once that so far as plants are concerned, they are obtained from the soil. Animals obtain their mineral matter from the vegetable foods they live on. These elements exist in the soil, combined with one another. Time will not allow us to day to consider these forms at length. They are present in the soil by reason of the disintegration and decomposition of the original rock masses, the resulting matter now constituting the greater part of the soil. The fact to be recognized is that when used as plant food they are soil-derived elements. Plants obtain their carbon from the carbonic acid (a compound of oxygen and carbon) present in the atmosphere. Hydrogen and oxygen are supplied to plants in the form of water. According to the class of plants considered, nitrogen is either soil-derived or taken from the atmosphere. For the majority of our farm crops it must be in the soil, where it forms an important constituent of the humus. If we take as an example of vegetable matter, a corn stalk and analyze it when it has come to maturity, we shall find that it contains about 73 lbs. of water, about 25 lbs. of organic matter, and in the neighborhood of 1 lb of mineral matter or ash. Perhaps you will be the better able to understand what organic matter and mineral matter are if I tell you how it is possible for you to make a rough analysis and identify them for yourselves. Take a corn stalk and cut it up very fine, weigh out, say four ounces, and place on a plate in the oven or other hot place for several hours. What has happened? It has dried up; in other words, lost water, and now weighs (we will say) but one ounce. Therefore 75 per cent. (approximately) of the corn stalk is water. What have we left? The "dry matter." Let us pursue this analysis one step farther. Put the plate on the top of the stove or over the coals until the dry matter changes and finally disappears. What has happened? The organic matter has burned away, and that which is left oehind is the mineral or inorganic matter, commonly known as "ash." We have now completed our experiment, and seen that the plant consists of three classes of constituents. We must now enquire from whence the plant obtains these constituents, which finally find their way into the milk pail in other forms or combinations.

A word or two with regard to the presence of water. I showed yesterday that pure water is essential for the maintenance of animal life. Water also is essential for the life of plants. We find that all plants take their nourishment either in the liquid or the gaseous form. All that plants require from the soil must be first in solution. or the plants cannot absorb it through the roots. The water which plants contain in such large quantities, therefore, has been taken from the soil by their roots. The water has descended in the form of rain and percolated through the soil.

Now, with regard to the organic matter, further processes of analysis would show us that it could be divided into two great classes, one of which consists entirely of the three elements, carbon, oxygen and hydrogen, and the other containing, in addition to these, a fourth element, nitrogen.

Let us consider, first of all, those which do *not* contain nitrogen. These are the fats or oils, fibre and carbohydrates. Only the last term requires explanatian. By carbohydrates we mean principally starch and sugar. From where does the plant obtain these? In a word, from the atmosphere. The original forms are present there as carbonic acid (a gas always to be found in the air, composed of oxygen and carbon), and vapour of water. These are taken in by the leaves and transformed by sunlight and the green colouring matter of plants into these organic substances. I have been speaking of carbonic acid as a gas exhaled from the lungs of animals. It is also formed when wood

burns in the stove. Nature has provided that plants shall use the waste products, if we may so call them, of animals; and thus you see her economy exemplified. Moreover we have seen that the greater part of the plant is made up of these air-derived elements. All the starch, sugar, oil and fibre comes from the air. The equilibrium in the atmosphere components, the purity of the atmosphere for the maintenance of animal life is thus maintained. To sum up, the green coloring matter which is contained in leaves, through the agency of sunlight, enables the plant to assimilate the carbonic acid gas which exists in the atmosphere, and then by certain life functions the plant forms from them very useful substances which serve as food for man and beast, viz., fibre, oil, sugar and starch. These differ but slightly among themselves as regards their chemical composition and their functions in the animal system, for they there serve to evolve the heat necessary for life.

Now, one word with regard to a class of organic substances which contain in addition to the constituents I have named, the element nitrogen. These are known as the "albuminoids" or "protein." Why have they received that name? Albumen, or the white of an egg, is a substance familiar to you all, and as these nitrogenous materials are very similar in composition to the white of an egg, they have been called albuminoids. We may consider them, therefore, whether occurring in the animal or vegetable kingdom, as very much akin in constitution and function to the albumen of white of egg. Similar substances are to be found in the lean of meat, the curd of milk, and also in the blood, and there are many other examples in the vegetable world which might be given. The gluten of wheat is one. The functions of the albuminoids in the animal economy are to repair the waste of the tissues and build up the muscle, bone and blood. They are necessary for the maintenance of life, for growth and development. Before leaving the question of nitrogen, I wish to refer to a question which was touched upon yesterday. You will see that I have placed this lower bracket in the chart so as to include the nitrogen, and consequently it is here to be considered as a soil-derived element, and I have also included this element in the upper bracket so as to show that it is also (in certain plants) an air-derived element. Now, some plants derive their nitrogen from the soil, others from the atmosphere. The first class may be known as soil nitrogen consumers. The larger number of farm crops are those which derive their nitrogen from the soil, and consequently we must recognize the fact that nitrogen in some form or other must be supplied to them in the soil. By such means only can we keep the soil fertile and get good crops. On the other hand, science has demonstrated that there is a class of plants that are able to assimilate and appropriate this free atmospheric nitrogen which we spoke of as being a mere diluent of the oxygen. What are these plants which can derive their nitrogenous nourishment from the atmosphere? They are known as the legumes, and include clover, lupines, peas, beans, etc. These by nodules formed on the roots which contain bacteria, have the power to appropriate this free nitrogen and convert it within their tissues into the most valuable of all food products—albuminoids. We may call these "soil nitrogen supplies."

To sum up and make one or two practical deductions from what I have said already. First of all, we have the larger part of the plant made up of water. We are abundantly supplied with water. We may, therefore, at once dismiss its consideration. Now, what do we find with regard to the fibre and sugar and oil of plants? We find they are made from carbonic acid and water, being converted from these materials by the life of the vegetable. Where were they obtained from? From the atmosphere. The large part, then, of matured plants consists of organic substances and water manufactured by the plant without any cost to the farmer.

Let us consider for a moment the case of the legumes. I have already pointed out that clover, peas and beans, have the power to assimilate the nitrogen of the atmosphere under certain favourable conditions. The growth of such crops leaves the soil richer in nitrogen than it was before, for the roots are rich in nitrogen. The lesson, therefore, to be learnt is that we should grow more of these crops and thus obtain a very nutritious fodder and a store of soil nitrogen for succeeding crops of cereals, grass or roots.

The chemist has further found that of all the elements that are required by plants, two others, viz: potash and phosphoric acid must be applied to the soil in addition to nitrogen if we would maintain fertility. For potash, I can strongly recommend wood ashes. Muriate of potash and kainit are also very valuable forms of potash. To supply phosphoric acid, bone meal and superphosphate should be used. All the other elements, save, perhaps lime, may be said to exist in sufficient quantities for all farm crops. We may conclude this part of my subject by saying that the farmer and dairyman must see to it that the soil is supplied with available forms of nitrogen, potash and phosphoric acid.

The plant stands between the soil and the animal kingdom. It elaborates, as I have described to you, albuminoids, starch, sugar, fibre, oils, and these are used by the animal to give strength, to develop vital heat, to build up the tissues of the body, to produce milk, wool, and so on. How these changes take place we may not stop to enquire, but in different forms we may recognize in the products of animal life the elements that once existed in the soil and in the atmosphere. Upon this chart I have indicated the percentage composition of dairy products, viz: of milk, cheese, whey, butter, butter-milk and skimmed milk. I brought it before the Association last year, but in this connection will bear repetition.

PERCENTAGE COMPOSITION OF DAIRY PRODUCTS.

Constituent.	Milk.	Cheese.	Whey.	Butter.	Butter-milk.	Skim-milk.
Water	87.5	30.0	93.1	15.0	90.4	90.3
Albuminoids	3.2	28.0	.9	.5	3.2	3.6
Fat	3.8	34.5	.4	82.4	.2	.2
Milk-sugar	4.8	2.0	5.0	.....	5.5	5.1
Ash	.7	.7*	.6	.1*	.7	.8

First of all, with regard to the organic substances of which we have spoken, let us see where they re-appear in the animal kingdom and more particularly in these dairy products. Sugar exists in milk as milk sugar. Oil re-appears in milk as butter-fat. With regard to albuminoids, we find them appearing in milk as the casein. This latter is the organic material which contains the nitrogen, and one of its chief functions, when milk or its product cheese is used as food, is as a flesh former. The water appears in the dairy products as water. In regard to the mineral matter, although in different proportions it is yet composed of very much the same ingredients as we find in the ash of plants. We must be struck with the similarity between plant and animal composition.

This chart so well expresses the composition of dairy products that I shall not on this occassion dwell at any length on that very interesting and practical part of my subject.

Of milk we may say that is the very best type that could be selected to illustrate a perfect food. All the constituents for the various wants of the body are present and present in an easily assimilable condition. The milk of different cows and of the same cow is apt to vary in the percentage of solids and more particularly of fat. There are, however, certain limits below which the solids and fat of milk of herds should not fall. The fat in milk is a measure of its value for consumption in the household, for butter and for cheese making, hence the importance of having a cheap and reliable means like the Babcock for estimating the fat.

Cheese is very highly nutritious. It contains large percentages of flesh forming and heat giving constituents, viz: casein and butter-fat.

*The differences that occur in the case of cheese and butter, between the total amounts of the constituents and 100, correspond to the percentages of common salt added in the process of manufacture.

Whey is poor in fat and casein, containing about half a per cent. of the former and nearly one per cent. of the latter as a soluble albuminoid. It has about five per cent. of milk-sugar and some mineral matter; the former gives whey its chief value as a food for pigs. It must, however, be supplemented by foods stronger and richer.

Butter is chiefly composed of the fat of milk, though from fifteen per cent. to twenty per cent. consists of water, salt and traces of curd. Butter-milk differs chiefly from milk in the practical absence of fat and in that part of its sugar has been converted into lactic acid. It is much more valuable as a food than whey because it contains the nitrogenous (casein) constituents of milk.

Skim-milk if fresh from the separator is simply milk unchanged save for the removal of its butter fat. Skim-milk from deep or shallow pans contains more butter fat than that from the separator, though it is seldom found as fresh as the latter. Skim-milk is an excellent food, and needs only to be supplemented by oil cake or linseed to furnish fat.

With what I have told you it will be quite easy for you to trace for yourselves where the various constituents of milk re-appear in its products. Further, you know now why it is necessary to supplement whey and skim-milk when used as foods and what the character of the supplementary foods should be.

Mr. Murphy: Is not the value of skimmed milk and butter-milk about the same?

Mr. Shutt: There is not very much difference. Much would depend upon whether a separator was used. Fresh skim-milk, however, is the more nutritious of the two, since butter-milk contains much of its milk sugar as lactic acid. On the other hand, careless churning may leave a good deal of butter-fat in the butter-milk, and thus increase the value of the latter as a food. Skim-milk may contain half a per cent. more of flesh forming constituents than butter-milk. The chief difference between butter-milk and skim-milk is that the skim-milk contains more of these nitrogenous constituents than the butter-milk. Butter-milk is far more apt to vary in its composition than skim-milk from the separator.

Mr. Murphy: Then skim-milk would be of more value to the farmer when coming fresh from the separator than butter-milk as feed for hogs?

Mr. Shutt: Yes. It should, however, be supplemented by some food supplying fat. You will then have a balanced food, one in which all the constituents for the various wants of the body are present—a food easy of digestion and assimilation.

ELECTION OF OFFICERS.

Mr. R. J. Graham presented the report of the Nominating Committee, and moved its adoption, seconded by Mr. Murphy. The motion was unanimously carried. The list of officers will be found on page 182 of this Report.

Mr. D. Derbyshire, Brockville, in acknowledgement of the continued confidence shown towards him by the Association in re-electing him as President, said: I thank you, gentlemen, for this vote of confidence, and I assure you that I accept the position of President again in the spirit which has led you to offer it to me. I have done the very best I possibly could to forward the creamery business in the Province of Ontario. Anything that I could do to make it valuable I have done, and all the directors associated with me have also done all they could to help the dairymen in every possible way. I am sure any who have listened to the addresses during the past two days will admit that we have been careful in the selection of speakers for this meeting. We will promise you that even better things will be done if possible in the future than has been done in the past. (Applause.)

The convention adjourned till 8 p.m.

SECOND DAY—EVENING SESSION.

His Worship Mayor MULHERN, who occupied the chair at this session, opened the proceedings with a few well-timed remarks. The audience was the largest during the convention, filling every part of the commodious hall. Between the addresses the Knox Church quartette, of Cornwall, rendered an excellent programme of music, which added greatly to the evening's enjoyment.

BREAD AND BUTTER.

Prof. ROBERTSON was the first speaker of the evening. He delivered an exceedingly valuable address on the subject of "Bread and Butter," which has been incorporated in the report of the Eastern Dairymen's Association. (See page 41.)

EDUCATION OF THE FARMER.

Prof. BROOKS came next, his subject being as above. He said: Seldom in these days of keen competition does the seller obtain what he would like for that which he produces. Human inventions, enterprise and industry, in the race for wealth, have largely revolutionized the industrial and business world. One man's labor, year by year, in most lines of effort, produces more and more. An inevitable consequence is falling prices. Under these conditions one of the most natural consequences is effort on the part of the producer to uphold or raise prices. Hence trusts and combinations are formed, efforts to curtail production are put forth. In some lines of manufacturing industry these movements often seem to be attended for a time with a considerable measure of success, but the failures are far more numerous than the successes. Except remarkable ability be enlisted in such enterprises, or legislation be secured which favors monopoly, such measures are fore-doomed to early failure, for they are grounded in opposition to natural laws; and though, for a time, under the most favorable conditions with such ability and legislation, successful, all monopolies in this age of general enlightment and democracy are sure to fail. The love of liberty and justice, the spirit of manhood and the energy of the Anglo Saxon race are too great to tamely submit to oppression. Shall peoples who, both in the old country and the new—from the days of "Magna Charta" to the present, have little by little freed themselves from the oppressions of the past—oppressions founded on birth and aristocracy, supinely submit to the infinitely worse oppression of wealth? The answer springs from every heart, surges through every pulse; it leaps to all our lips—"No, ten thousand times, no!"

But even were combinations to raise prices not repugnant to all our nobler instincts, such combinations would yet be almost an impossibility in most lines of husbandry. Those engaged in most branches of agricultural production are too numerous, too widely scattered, effectively to combine for such purposes. So little capital, relatively speaking, is required to become a producer in agriculture, that a combination once formed must soon face formidable outside competition. Let us, then, brother farmers, recognize these facts at the outset. Let us cease to devote so much attention to the market end of the line. This is largely beyond our control, and must ever remain so. The great law of supply and demand will work its legitimate effects in spite of our puny efforts to prevent. Of course, in what I have said, I have no intention to counsel against the exercise of the utmost business knowledge, sense, shrewdness and energy, in the effort to secure as large as possible a share of the price the final consumer pays; but let not even this effort

engross too large a share of our energies. The other end of the line—the producing end—is more largely under our control. Let us produce what is wanted, and at the lowest possible cost, and of our success there can be no doubt if we bring to the undertaking the knowledge which I believe is within the reach of all.

Economy in production, the prevention of wastes, should then be our watchwords. Let me enlarge upon this theme, for its consideration emphasizes as nothing else can the necessity of education for the farmer. Right here, we farmers may learn a lesson from our brother manufacturers, for we are manufacturers as truly as those ordinarily called such.

The manufacturer has been quick to learn the lessons of the times to adapt himself to the new conditions. By increased use of machinery, more thorough systemization of his business in all directions; and (here is the point to which I would draw particular attention) by avoiding all wastes, so soon as human knowledge points the way, he is continually reducing the cost of his product. Let me call your attention to a few instances illustrative especially of the last named point.

The manufacturer of flour from wheat furnishes a good example. Only a few years ago the method in use was essentially comprised in two processes. First, the grain, skin as well as starchy interior, was ground to a meal; and second, this meal was bolted (sifted) through fine silk reels in the effort to separate skin (bran) from flour. Much of the skin having been finely divided between the mill-stones, the process was unsatisfactory in two directions. First, some of the more finely divided particles of the skin passed through the reels with the flour, giving it a dark color; and second, considerable of the flour in the shape of impalpable dust adhered to the bran and was lost to the flour barrel. The "gradual reduction" process, first employing sets of rollars, working at constantly increasing degress of closeness, was invented. The kernels of wheat instead of being ground are crushed ever closer and closer as they pass from one pair of rolls to another. At each stage a portion of the starchy interior is separated, the germ is extracted. Meanwhile the skin is broken comparatively little, and leaving the last pair of rollers in large thin flakes from which the mighty pressure has loosened all adhering parts of the grain which are fit for flour and passing through the reel in which this flour is sifted out, this skin goes, you are thinking, perhaps, to the bins for bran. But no, the miller is not satisfied even yet; adhering to the flakes of bran is considerable dust;—the finest flour dust, and this he must save. So the bran is led to an ingenious machine—the "bran duster." Here it passes on to an endless apron reel in the thinnest possible layer; and as it moves along, a gentle blast of air acting upon it keeps the particles gently dancing and as it dances turning successively all sides to the gentle zephyr, this flour dust is separated and goes to help fill the barrel.

The recent discovery of the agricultural value of the slag from the furnaces where Bessemer steel is made—furnishing as it does an extremely valuable phosphate; the production of sulphate of ammonia in connection with the manufacture of illuminating gas, beet-sugar, coke and bone-charcoal; and the recovery of potash from the washings of wool are other examples of the careful attention to economy on the part of manufacturers which should be of particular interest to farmers.

Of all branches of human industry farming, I believe, is the one in which there are most wastes. In this statement I would not be understood to imply that farmers are less appreciative of the importance of preventing wastes than those who are engaged in other industries. For thorough going economy, in so far as he sees the way to it, commend me to a New England or Canadian farmer. If he is to be at all criticized in this connection, it is, perhaps, because he is sometimes a little slow in looking for more light as to methods,—a little too apt to suppose that he "knows it all."

"Knows it all!" What an expression! Nobody does or can "know it all." "All" has not been learned, and never will be. We have made wonderful progress, it is true, in agricultural knowledge during the last fifty years; but the knowledge of even the wisest is, I often think, abysmal darkness in comparison with *all*. Let us consider a few of the things which might perhaps be accomplished if we *knew it all*. The plant food in

one hundred bushels of potatoes can be purchased in the very best forms for rather less than five dollars: yet I know intelligent farmers who assert that they are unable to get back even the money expended for fertilizers used for that crop. If we "knew it all," though we should doubtless require a considerable plant-food capital in the soil, we might hope to raise potatoes with an annual expenditure for fertilizers of about five dollars for each one hundred bushels. No one knows enough to do this now, and at the same time maintain his soil capital intact. Calculation shows that the important elements of plant food in one hundred bushels of corn can be bought for about twenty-three dollars, those in a ton of English hay for less than eight dollars. No one knows how certainly to produce these crops with these expenditures.

In one hundred cans of milk there are but about ten pounds of nitrogen. This in forms suitable for the food of plants costs about $1.50. Who knows how to use the nitrogen, which can be bought for $1.50, first to produce the plants for the food of the cow, and second, to feed these plants to the cow so that she shall produce even one-quarter of one hundred cans of milk. True it is not to be expected that we shall ever be able to recover all of this nitrogen, first intrusted to the soil, in the form of milk; but is the necessary loss more than three-quarters of the whole? On the contrary, science now points the way—by cultivation of legumes under appropriate conditions—in which the dairyman should put into his milk cans more nitrogen than he buys in the fertilizer bag. Still I venture the assertion, there is not a farmer in my audience who can do this.

The potash and phosphates in one hundred eight and a half quart cans of milk can be purchased in fertilizers for thirty-four cents. No one knows enough to transfer them through soil and crop—and the cow's mouth—to the milk pail without enormous loss.

All the plant food in one ton of butter can be purchased for less than one-half a dollar. The aggregate of such food in one ton of well-made butter is only about four pounds. Should not the butter dairyman be able to carry on his farming operations without diminishing the fertility of his fields? How many farmers do this? How many *know how to do it?* Do not these facts and thoughts emphasize the need of education for the farmer?

It is undoubtedly true that the necessary wastes in farming, because of deficiency in knowledge of even the wisest, are as yet considerable, but the necessary are small in comparison with the preventable wastes,—wastes which will be prevented when knowledge of the methods is generally diffused. Farmers are often accused, unjustly, I am assured, of old-fogyism, of clinging to precedent, of backwardness in making improvements. My experience leads me to acquit them of these faults. They are not speculative, they possess and act upon the dictates of a wise conservativism: but point the way to improvements and they are quick to follow. You would travel far on my side of the imaginary line that divides us, and I doubt not on yours, too, to find a second farmer who would manifest the spirit illustrated by an incident said to be of recent occurence to which you will pardon me for calling your attention.

The party vouching for the authenticity of this occurrence is an agent for wind-mills, and we will tell the story as nearly as possible in his own words:

"Curious fellows, those Waybeak farmers are; droll chaps to deal with, too; cute and sharp at a bargain. Most of them know a good thing when they see it, so I took a good many orders; but once in a while I come across a conservative old hayseed whose eyes are closed to anything modern. One of that sort helped me to a good laugh the other day, and I might as well pass it on.

"He was a genial, white-headed old fellow, who owned several fine farms, with prime orchards and meadows, barns and fences in apple-pie order, and dwellings serene in comfort.

"He listened closely while I explained and expatiated on the utility and excellence of our special make of machines; then taking a fresh supply of Cavendish, he squared himself in his chair, with his hands in his pockets, and held forth in this fashion:

"'Waal, stranger,' he said, 'your machine may be all right; but now see here. I settled here in the airly fifties, broke the trail for the last few miles, blazin' the trees as we came along. I had a fair start, good health, a yoke o' cattle, a cow, an axe, with one

bit an' three coppers in my pocket. I built a log house with a shake ruff an' a puncheon floor, an' a cow shed of popple poles ruffed with sod. I worked hard, up airly an' down late, clearin' up land by degrees, an' diggin' a livin' out o' the sile by main strength, an' no favors except the blessin' o' the Almighty. The Lord's been good to me. He's gi'n me houses an' barns; He's gi'n me horses an' cattle; He's gi'n me sheep an' swine, an' fethered fowl o' many kinds. An' now, stranger, after all that, I'll be everlastingly durned if I'll be so mean as to ask Him to pump water for 'em.'

"'And then,' continued the story teller, 'he brought his hand down on his knee with a whack that fairly echoed through the house. Of course I couldn't urge him to purchase after that expression of his sentiments, and I left him. Independent wasn't he?'"

This story, you will recognize, is in the usual vein. It begins with, "way-back farmers" and "old hay-seed"; and illustrates, therefore, not alone the spirit from which, I hold, you as a class are generally entirely free, but as well the popular idea still so frequently held concerning us.

Both the "spirit" which the old farmer is made to illustrate and the popular idea of which the story is evidence can best be got rid of by education.

What I have thus far said makes evident my idea as to what should be the prime object in view in the education of the farmer. This is a practical age; the farmer faces practical and vital problems. His education must be directed primarily to the throwing of light upon these problems. Education, however, which should comprise only work of this class, useful as it is, would fall far short of the ideal which we should keep ever in view. A knowledge of facts and principles related to his business is necessary, and the education of the farmer should impart such knowledge; but the *full, broad scheme* of education should aim to *develop the man*, to awaken his faculties, to *strenthen his mental powers;* to raise in him a thirst for knowledge, a *love* of study; and to show him *how* to study.

Emerson somewhere says: "You should hitch your wagon to a star." Yes, our ideals should be high, they cannot be too high, provided we are wise in our efforts to realize them. Let us not think, however, to reach the "stars" by one grand flight: our path to them must be difficult and long. We must not wholly confine our attention to the distant goal; we must study that part of the road leading toward it which lies immediately before us.

Approaching my subject with these principles of action prominently in mind, with the determination to make its discussion practically helpful in so far as time and abilities permit; the thought at once obtrudes itself: "We shall not all reach the goal." Of the soldiers who, full of life and hope enter the battle, alas, some must fall by the way. Our problem is the education, the advancement of the agricultural classes. But at the very beginning of the road, almost at the foot of the hill of knowledge stand many who have long passed the morning of life. How shall we help, how and to what extent can we educate these? Clearly our subject must be sub-divided; the methods suited to mature men—men in most cases dependent upon their own efforts—not simply for their own support but for the support of wives and children as well, are not the methods which will be best for the young. The education of these mature men must be mainly practical; a bread and butter education; directed chiefly to imparting a knowledge of those things which will enable them to produce a better article at less cost. But even so, it is not satisfied with imparting simply empirical rules and principles of action. Circumstances are so infinitely varied that he who has no knowledge of principles is at an enormous disadvantage. These principles must, however, be presented plainly and practically; and in imparting them laboratory methods, in so far as may be possible, should be followed. The travelling dairy schools admirably illustrate such methods; and your knowledge of these schools, their management and their results, fortunately renders detailed discussion of this matter unnecessary. In the particular field which the managers of these schools aim to occupy, they leave little to be desired. Dairying, however, is but one, though a very important one, of many lines of agricultural effort. The field,

therefore, is much broader than is covered by these dairy schools; how broad any intelligent man who has thoughtfully followed any branch of farming well knows. How many times questions urgently requiring solution and involving how wide a range of human knowledge present themselves,—questions which unfortunately not even the wisest can always answer!

Oliver Wendell Holmes has pithily said: "To succeed in life, one must know something about everything and everything about something." Surely in no pursuit is this more true than in farming, dealing at every step as it does with nature and the secrets of nature. It will be readily recognized, then, that the problems to be solved in the effort to give helpful education to these busy mature men must be many and difficult. In the first place there is the problem of time. These men as a rule can spare but little time away from the exacting duties of home; and that only at favorable seasons.

The agricultural periodicals and the many useful books and other publications on agricultural subjects help greatly in this work and they have the great advantage that they can be taken into the home. While, however, they are highly useful if studied aright, it is to be feared that in far too many instances they make little impression—not because the matter therein is not good—but because there is a lack of concentrated and continuous effort in any one direction. If we would make an impression upon iron we must strike repeatedly in the same spot. By so doing we can leave a lasting impression—we can shape it at will. So it is with mind. The habit of weekly going through an agricultural paper, treating briefly of a hundred different topics and of each in a fragmentary and necessarily superficial way, while it may result in the acquisition of occasional useful facts and principles, does not strengthen the mind, does not give new power, and is not education in any true sense of the word. It tends towards "some knowledge of everything"—not to "all knowledge of something," which is the more useful of the two.

And yet the number of hours which can be and usually is spared during a year in this desultory reading is considerable. If directed wisely and systematically towards the acquisition of a thorough and definite knowledge of *something*, the end of the year would find the reader distinctly further on the road to learning than at its beginning, and with added power of study.

Few, however, have the power to select and read wisely by themselves. Few have the persistence to follow unaided a definite line of study. An adaptation of the Chatauquan system can help us here.

A few of our agricultural colleges have already made a move in that direction; and have established courses of reading for farmers, which have been helpful to many. This is a branch of university extension work which might be more generally adopted with great advantage.

There are many, however, among farmers as in other classes, who have little taste for books. They derive no inspiration from them. For such, especially, and to a considerable extent for all, the living presence and voice is better. Hence such conventions as this; and hence the various modifications of what we in the United States usually designate institute work. Institute work, in some States, is conducted under the general management of the Boards of Agriculture. In others the Agricultural Colleges take the lead; but whether nominally in charge or otherwise, since the Agricultural Colleges furnish the larger share of the speakers, this institute work should be regarded as a branch of university extension.

This work, while making for progress on the whole, is attended with very varying and, as I have observed it at least, in many instances rather discouraging results. The attendance is uneven. In some localities large, enthusiastic and inquiring audiences greet the speakers and the discussions following the addresses are animated and helpful. In far too many instances, the audiences are small, no matter how able the speakers. This failure to secure an audience is doubtless in many cases due to shortcomings in the management which is usually vested in the officers of the local agricultural society. When this

society is vigorous and well officered, and where a local Grange co-operates with the officers of a society, the institutes as a rule are highly successful. The Grange enlists the ladies and thus secures to a far greater degree than is otherwise usually possible, the assistance of an element of society which no community can afford to neglect. Time will not allow me to discuss the Grange at any length; but, although not a member, I desire to remark in passing, that in countless ways other than the one mentioned, the Grange serves as a centre for education. With us it is an exceedingly important educational factor; and closely allied to the Grange in educational and social methods must be mentioned the farmers' clubs, so often of great educational value to their members.

It appears to me that the institute as usually managed is open in considerable measure to the criticism I have made regarding the usual use of agricultural periodicals and other literature; and this is true even when they are the most successful. In them there is a lack of sustained effort in any one direction. At one meeting this subject or several subjects; at the next another subject or subjects and so on from year to year. Can it be wondered that upon many of those attending the effect is slight?

Speaking of the instruction of the farmer in agriculture, in a report upon the Agricultural College of Massachusetts, a member of our Board of Agriculture recently said: "It must be brought home by the living voice and presence; experts must meet the people face to face, and talk familiarly about those things which deeply interest both. What better fountain for such streams of influence than the State institution at Amherst? Let them be designated as they may,—'popular,' 'conversational,' 'familar lectures,' 'institute work,' or, more properly, as conforming to advanced methods and as boldly proclaiming the faith and policy of their source, 'university extension'; professors and teachers from this centre during the farmer's winter leisure should go abroad in the Commonwealth, organizing in the cities or larger towns and in rural centres special courses of instruction suited to the needs of practical farmers, and thus create in a sense an itinerant college. But, it is objected, this would involve the necessity of a larger teaching force and increased expenditure. Be it so. Multiplying needs and a widening field are evidences of growing intelligence and higher standards; and Massachusetts, ever in the van of educational progress, will be the last to shrink from responsibilities imposed by success, or to regard with disfavor such drafts upon her bounty."

I have given this quotation because it suggests what I regard as a needed modification in institute work. Observe the form of expression "organizing * * * * courses of instruction suited to the needs of practical farmers." Here you see is the idea of continuous correlated work—"courses"—implying concentration, repeated blows which alone produce much effect: and I may remark that this expression of opinion carries with it the greater weight, coming as it does from a teacher of much experience.

With such courses there will still be a field for the occasional institute—"Something about everything" we need; but without the "courses" we shall fall far short of learning "everything about something."

One modification of institute work, the "field" meeting or institute must always prove useful. Held, as such meetings always are, upon farms exemplying in some direction at least, a high standard of agricultural attainment, they furnish object lessons which do much to arouse the spirit which means progress.

In line with the "courses of study" in "itinerant colleges," and in some respects superior to them are the short winter courses which so many of our agricultural colleges are now offering. These courses are, it is true, to a considerable extent attended by young men as well as the mature and so to a lesser degree are the institutes: but I believe that we should aim to hold the younger men for longer courses; and that these short winter courses as well as the institutes or "itinerant colleges" should be planned with especial reference to the requirements of older and busy men who must perforce be satisfied with less than we should all determine to give our boys—less than all boys should determine to have for themselves.

Short winter courses at the seats of the various agricultural colleges cover the entire field of agriculture. The attempt is made to adapt them to the peculiar lines of farming prominent in the several States. Dairying, live stock husbandry, fruit culture, floriculture, market gardening, are a few of the more specialized courses. Then there are offered courses in more general lines, including the study of soils, manures and fertilizers, drainage, etc.

These courses possess one great advantage over the "itinerant courses," viz., being conducted at the agricultural colleges, use can be made of the many facilities for educational purposes collected there. The barns and stables and the representatives of the various breeds of live stock usually found in them ; the hot-houses and their contents ; the well-equipped laboratories ; the museums, the charts and maps ; the experimental departments with their many facilities for investigation, and last, and perhaps the most important of all, the libraries, are among the more prominent of such facilities. Then, too, the same men who are employed in teaching in the more strictly collegiate courses, can do a considerable share of the extra work involved in these short courses without neglecting their regular work.

On the other hand there is the disadvantage that many who might attend such courses were they offered near their homes will consider attendance not feasible if they must take up residence at a distant place. If "Mahomet can not or will not come to the mountain, then it is best that the mountain go to Mahomet."

Results with us abundantly demonstrate that the short winter courses at the colleges are filling an important field. They are largely attended—especially the dairy courses—possibly because recent advances in methods of dairying have been so great and so rapid. Those attending them range from sixteen to seventy years of age, and there is a considerable percentage of married men among them. Professor Plumb, director of the Agricultural Experiment Station in Indiana, writing of these courses, has recently said : " Unquestionably the short-course students in the agricultural colleges are unusually devoted to their studies, and have a desire to gain information that must be a pleasure to the instructor interested in his work. When men seventy years of age will leave their work at home and attend college for two or three months in the winter to gain more and better information concerning their business it indicates that the work being done must have met their commendation in no common degree." There appears to be an important field, then, for both of these classes of "short farmers' winter courses."

Having now considered the methods which have been and may be useful, more particularly in the education of the older farmers, though to a considerable degree helpful to many young men and women as well, we may pass on to a consideration of the measures which have been and may be taken for the education of the young men and women who are to become farmers and farmers' wives. Holmes has said that "A man's education should begin with his grandfather" ; and we have the best of authority for the belief that "the child is father to the man." Let us, then, recognize at the start that, since the "grandfather" has usually got beyond us, we shall certainly act wisely to do the best possible under the circumstances and begin with the child.

Yes, begin with the children in the public schools. Unfortunately I am not familiar with the methods and results of public school work in the Dominion ; but as regards the United States, I thoroughly believe that as a rule the tendency of the training, in even those public schools which the farmer chiefly has supported, has been to educate away from the farm. There are, of course, other agencies at work, but I believe the country schools may be made to do much to counteract the great and ever increasing rush towards the cities and large towns. At the close of the last century only about five per cent. of the population of the United States was found in towns of more than ten thousand inhabitants. The close of the present century will find about one half of our total population in cities.

This transfer of population, it is true, is not altogether undesirable. Machinery in agriculture has immensely enhanced productive capacity. A far smaller proportion of our population than formerly can produce agricultural necessities for all, and the larger

the proportion of non-agricultural citizens, provided such citizens are prosperous, the better the markets for the products of the farm. I do, however, know that many a life is rendered less useful and less happy, that many a life is ruined as a result of the mad race for wealth in cities and towns—lives which with proper educational influences in early life might have been productive and happy. The over-crowded ranks in business and trades and the increasing numbers in almshouses, insane asylums and prisons bear most conclusive testimony to the fact that in the various non-agricultural pursuits of life success is not to be easily attained. And it should be remembered that when the struggle results—as alas it often does—in failure, a burden is imposed upon the productive classes—a burden of taxation, of which the farmer often bears the lion's share, which makes his life the harder.

No, it is not well that so many should leave the farm. All legitimate influences should be brought to bear against this tendency of the times. We all agree with Goldsmith in the sentiments expressed in the oft-quoted lines:

> "Ill fares the land, to hastening ills a prey,
> Where wealth accumulates and men decay;
> Princes and lords may flourish, or may fade—
> A breath can make them, as a breath has made—
> But a bold peasantry, their country's pride,
> When once destroyed can never be supplied."

Time will not allow me to work out the details of common school work, nor is it necessary, for each community must to a large extent work them out for itself; but I would make emphatic the expression of my conviction that the agricultural education of farmers and farmers' wives should begin in the common schools. But a very small percentage of our youth ever go beyond these schools, and yet the training in them has been largely shaped with reference to the supposed requirements of those who were being fitted for college. It is time that we called a halt. Let us teach in the schools those things which relate to life; in the country those things which relate to country life—the rocks, the soil, the air, the animal, the insect and the plant; and everywhere those things which relate to our globe in its larger relations—to the sun, the moon and the stars; those things which relate to the nations and their history, to society, to business, to literature and to man; and let all be taught to develop manhood and womanhood; the power to study, to think and to reason.

The celebrated "committee of ten" appointed to consider secondary school studies in the United States, in a measure recognizes the desirability of changes such as I have suggested, but, composed as the majority was of men who were connected with colleges, it cannot be wondered that in their recommendations the preparation for college is kept prominently in view. True, an effort is made to adapt the work in the elementary and secondary schools to preparation for life as well as for college, but to me it seems that life, the factor which concerns all most vitally, is still to too great a degree made subordinate to college.

Still the introduction of "nature studies," manual training, sewing, cooking, etc., are steps in the right direction.

☞ Beyond the public schools, we in the United States, as you doubtless all know, have a large number of agricultural colleges and schools, established and in part supported by grants of public lands and money by the general Government; each State has at least one such school or college. These are by no means entirely supported by the general Government. The several States have for the most part contributed largely to the equipment and support of their own colleges and schools of agriculture, and most of them make annual grants of money for their maintenance, improvement and support. Naturally the amounts thus contributed by the States vary widely as the necessity varies. Massachusetts, though only about one-fifth of her people are engaged in agriculture, has been liberal in her grants to her agricultural college. Since it was established in 1866 she has given it appropriations aggregating about $750,000. She now makes regular annual appropriations amounting to $30,000. All our buildings, of an aggregate value of

$265,000, have been erected at her expense. From invested funds derived almost entirely from money granted by the general Government, and from annual grants by that Government we draw annually for educational and experimental purposes the sum of $42,000, making our aggregate annual income about $77,000. Into the particulars concerning the support of our other agricultural institutions I will not go. It suffices to know that the funds are derived both from the State and the United States or general Government funds in all cases.

Most of the States have but one agricultural college. With this is combined a mechanical or engineering department in almost all cases. These colleges are generally designated agricultural and mechanical colleges; but the number of students in the engineering departments invariably largely exceeds the number in the agricultural department. In a considerable number of States the funds received from the general Government were given to an already existing college or university on consideration of its establishing an agricultural course as well as engineering courses where these did not already exist. Thus in New England these funds were turned over to Dartmouth College in New Hampshire, to Yale University in Connecticut, to Brown University in Rhode Island, and to the University of Vermont in the State of Vermont. In New York, Cornell University was founded with these funds, in Pennsylvania an Agricultural and Mechanical College, in New Jersey the money went to Rutger's College, and so throughout the Union in almost all the States.

In Massachusetts, the funds received from the general Government were divided, two-thirds of the amount was given to the agricultural college established at Amherst and one-third to the Institute of Technology in Boston. Results have abundantly vindicated the wisdom of this course. Though Massachusetts is not looked upon as an agricultural state—though only about one-fifth of our citizens, as I have said, are engaged in agriculture, we have more agricultural students in collegiate courses than in any other State. During the year 1894, no less than 206 agricultural students were connected with the college, and the average number of undergraduate students was about 160. We offered two courses in agriculture, one a four-year course, the other a two-year course. The number of students taking the longer course was 115. The two-year course was first offered in 1893.

Let us make a few comparisons, for which purpose I will select some of our largest and most populous agricultural states. New York in eight years, 1886 to 1893, graduated 43 students in agriculture out of a total of 1,348 graduated; Pennsylvania in 1893 had one student in agriculture out of a total of 200; Ohio, in 1893, out of a total of 83, graduated one in agriculture; Wisconsin in 1894 had 5 in her four-year course in agriculture and 102 in her two-year course; Iowa, in 1891, out of a total of 39, graduated one in agriculture; Illinois, in 1893, had 7 students in agriculture, and Indiana, in 1892, had 18. In all these States the agricultural course is but one of several courses offered—courses in engineering, architecture and mining, and letters and art as well, in many cases.

In making these comparisons, it is not at all my purpose to demonstrate superior wisdom on the part of Massachusetts, for the separate establishment of a purely agricultural college there was largely the result of accidental conditions—existing conditions, not conditions produced by design. My object is simply to bring out clearly the fact that collegiate courses in agriculture have not been successful with us when made parallel with courses in letters and arts, in engineering, etc.

The reasons why this should be the case I have not time to discuss; but I may say in passing that undoubtedly the arrogation of superiority to the agricultural students on the part of those in other courses, an arrogation which they find it the easier to support because of the still too common estimate in which farming, as compared with the so-called learned professions, is held, is the most important single factor.

Were additional evidence of the impolicy of making an agricultural course a branch of an established college or university needed, the experience in the New England States where it was tried would be convincing. Neither at Dartmouth, Brown nor Yale did any

considerable number of agricultural students ever present themselves; and within a few years the college of agriculture in each of the States concerned has been divorced from the older college or university.

There is one apparent exception in the United States to the general rule, that agricultural courses are not successful if established parallel with other courses. This is furnished in Michigan, where both the agricultural and engineering courses were made a part of the same institution. In Michigan there has always been a good number of agricultural students, while in other States where this combination has been tried the agricultural course has been almost a complete failure.

The different result in Michigan is undoubtedly to be ascribed in large measure to superior wisdom in management. One point in particular deserves attention. In Michigan the students in engineering and other courses are required to work as many hours in the shops, at the forge, lathe, etc., as are required of the agricultural students in the field, garden, plant houses, barns, etc. This may seem a trifling matter, but in the eyes of young men and young women it appears important; and further, the knowledge of this single regulation gives us an important hint of the spirit which has dominated in Michigan—a spirit born of a determination to give both courses a strictly equal chance. It is to be feared that in too many instances this spirit has not prevailed.

It may seem, therefore, that an agricultural course may be made successful side by side with other courses; but when we consider that Michigan, one of our largest agricultural States, with about seven times the area and five or six times the agricultural population of Massachusetts, has less agricultural students than the latter State, we can but look upon this fact as strong presumptive evidence that even when otherwise under the wisest management it is better that an agricultural course should be established by itself.

Let me attempt in conclusion, in the fewest words possible, to give you an idea of the equipment and work at Amherst and its results. The Massaehusetts college is purely an agricultural college. It is located upon an estate of about four hundred acres, comprising a wide variety of soils as regards elevation, aspect, drainage and physical and chemical characters. It includes beautiful natural forest, mowings, tillage, orchards, vineyards, gardens and ornamental grounds. We have extensive greenhouses, model barns and stables, laboratories, museums, library and dormitories. We have a good working equipment in live stock, plants, models, apparatus and charts of all kinds. We have a faculty of seventeen men.

We offered but one course, covering four years, and this course was the same for all up to the year 1893. From the fall of that year all studies except military science (required by the United States Government) and training in the use of the English language have been elective in the last year of the course. Besides all branches of agriculture, fruit culture, floriculture and gardening, this course embraces study of the following subjects:—Chemistry, botany, zoology, entomology, veterinary science, mechanics, physics, and mathematics, all taught with especial reference to agriculture; and French and German (Latin has been substituted for German a part of the time). Students entering upon this course must now be at least sixteen years of age. Up to 1894 the age limit was one year less.

Speaking of the results of the work in the college in 1892, I presented a summary to which I ask a few moments' attention.

Since the college opened its doors to students, in the fall of 1867, it has received within its walls (not including students now in college) 879 men. We have at the present time 140 men. Of the 879 who have studied in the college for longer or shorter periods, 361 have completed the prescribed course of study and received the degree of Bachelor of Science.

Complete statistics of 313 of these men, the graduates of the last class not included, are at hand, and examination reveals the following facts: One hundred and sixty-two of these men, rather more than one-half of the entire number, are either farmers or engaged in

closely allied pursuits. There are 92 farmers, and the remainder are distributed as follows: Agricultural editors, 4; fertilizer business, 7; teachers in agricultural institutions, 20; experiment station directors, 2; veterinary doctors, 7; professors of veterinary science, 2; assistants in experiment stations, 22; assistants in the Board of Agriculture, 2; Gypsy Moth Commission, 4.

I want particularly to call attention to the prominent positions occupied by our graduates in agricultural colleges and experiment stations throughout the country. No other agricultural college has furnished so many men for such positions. One-sixth of all our graduates are employed in agricultural colleges and experiment stations. Among our graduates, we find two college presidents, several professors of agriculture, two directors of experiment stations, and several vice-directors. Among thase men not connected with agricultural pursuits we find nine lawyers, eighteen engineers and eleven teachers. Medicine claims no less than eighteen men, and there are two dentists and four clergymen. These men, occupying the prominent positions they do, educated in sympathy with agriculture and understanding its needs as they should, must exercise a powerful influence in its favor. Many of them will doubtless some day own and manage farms.

Business claims the greatest number among those of our graduates who are not farmers, and no one who remembers the splendid opportunities for the acquirement of wealth in business pursuits will wonder that this should be the case.

Our graduates touch agriculture, however, at other points. Indeed, wherever they are found they are usually prominent in every movement which tends to uplift the agricultural classes. Thus we find among them numerous presidents and secretaries of our agricultural societies, and members of the State Board of Agriculture. Two of them have been masters of the State grange, two of them have been lecturers of the State grange, and they are everywhere at the head of local granges, farmers' clubs, etc.

It may be thought by some of my hearers that in not having graduated a larger proportion of men who have become farmers the college has in a measure failed to accomplish the object for which it was established. Let me ask your attention to the words of its first president, taken from a report published in 1867:

"The fear is expressed by some that, if an attempt is made to give a truly liberal education, the students will turn aside from agriculture to other pursuits. Undoubtedly some of them will If such an education is given in practical science as ought to be given in such an institution, there will be a demand for its students as teachers and in other professions. And it would be an education entirely unworthy of Massachusetts, and contrary to the plain intent of the Act of Congress donating the land, if it were so meagre in its requirements that the students should be fitted only for one pursuit in life. No surer way could be devised to defeat the very end for which the college was established than to conduct it on a plan which proclaimed in theory and practice that its students were to be kept in ignorance of certain things lest they should be above their calling. No institution can ever succeed on such a plan, and it ought not. It is difficult to see what a student would enter such an institution for. Such views are repugnant to every generous feeling which an educated man ought to possess, contrary to the principles of our institutions, and are not sustained by the present position of the agriculturists of this State. The adoption of such a system would be simply saying to the farmers of Massachusetts that they are tillers of the soil because thay are too ignorant for other pursuits. An entirely different principle has been acted upon in organizing the college."

You will see from this that it was not expected that we should educate only farmers, nor was that considered desirable. It was believed that these men, educated in the agricultural college and going into other pursuits, would possess and act upon the dictates of a more enlightened judgment in all matters pertaining to the agriculture of the country and thus indirectly promote its progress—nor, I may add, has this expectation been disappointed.

I trust that I shall be acquitted of egotism in thus calling attention to the agricultural college of Massachusetts. In what I have said my object has been simply to give you a knowledge of the results in what is the most purely agricultural college in the country.

One or two other phases of our work must be briefly alluded to. In 1893, we offered for the first time a two-years course in agriculture. The numbers presenting themselves for this course have been fair. The students have shown a very gratifying interest in their work, and I believe such a course will be useful. The age limit is fifteen years and the examinations for admission to it are less difficult than for the longer course. An effort is made to suit this course to the requirements of young men unable to spend the time necessary for the longer course or to meet its expenses, who purpose to become farmers or gardeners. There is, however, a strong feeling that this shorter course was injuring, or would injure, the longer, and as the latter is considered the more important as making more for progress, the two-years course will not be offered hereafter. In place of it we shall offer short winter courses such as those of which I have already spoken. We now offer also post-graduate courses leading to the degree of M.S., but in this direction our work has as yet been limited.

THE OLD AND THE NEW AGRICULTURE.

Mr. C. C. James, Deputy Minister of Agriculture, was introduced, and said: It is not many years ago since the farmers of this country lived in log houses that were heated by large open fire places and lighted by tallow candles; when the farmers, with their families, were dressed in home-spun and supplied with food such as they produced entirely on their own farms; when they had but few recreations, such as an occasional visit to some neighbors. When they attended church it was in their own home, or they went to some neighbor's house, where the minister came from time to time, to listen to his instructions. When the week was done they rested with an honest feeling of having done their duty. It was a time when they had few evenings to spare and they spent them alone, isolated and shut up to themselves. That is a period not very long ago.

Now, all through this country, we find farmers living in stone, or brick, or frame houses, heated by coal stoves, and in some cases by furnaces; supplies of all kinds are brought by light vehicles almost to their very doors; daily papers, agricultural weeklies and magazines, Government reports and bulletins containing reports of Farmers' Institutes and other agricultural meetings are distributed broadcast, and in all directions the farmers to-day enjoy advantages which bring out their latent power in a manner that was utterly impossible under the old system.

There are many here to-night who can go back in memory to the old condition. You are now living in the new. What has brought about this great change? I shall not go into it in detail, but will refer briefly to four things:

First, there has been developed all over the world a wonderful system of transportation. Steam to-day drives great steamships over the ocean, so that, where it formerly took weeks to go from one point of the world to another, it now takes only days. Our continents are crossed by many lines of railways, and the products of Australia are sent to Europe to compete with those of America. There has been a widening out of communication, and at the same time all parts of the world are being brought closer together. The result of it is that we are compelled to raise our farm revenues from the production of the higher grades of articles, using as food for our animals the coarser grades which were formerly sold. In the old days the farmer had the various contributions from his swamp lot or wood lot, and, from his cultivated land his wheat and other grain. What has he to-day? He has the sheep, pigs and cattle, the beef, and mutton, and pork; he has his wool, and butter, and cheese; he has his fruit and a number of other articles. So that you see, not only in the mode of life, but in the methods of agriculture, a change has come to you, and one way that has been brought about is through improved transportation facilities.

The second change I will mention has been brought about by the application of machinery to agriculture. It is about thirty years since the first reaper was used in American agriculture. Now, just think of it! For thousands of year and until fifty years ago, the sickle was the sole implement used for reaping the grain. Then we had the

scythe introduced, and next the cradle. Now we have the self-binder. What next? That is one illustration to show that in the last half century we have made more progress in this direction than had been made in the whole previous history of the world. Perhaps in no branch of agriculture has the application of improved machinery been more noticeable than in connection with the dairy industry. We have now our milking machines, our machines for churning the butter and working it and salting it. The fact of the matter is, it is possible from the very drawing of the milk to the factory to the placing of the finished product on the market, to go through all the operations by machinery.

Another thing that has wrought so much change upon agriculture is that which we have been hearing so much about during the last two days—the application of agricultural science. It is a thing of modern development. I believe that agriculture is to day going through a more complete and more rapid change than that which is experienced in towns and cities, owing to the results of scientific development.

The fourth cause is the dissimination of information. The education of agriculturists in their own calling never received so much attention as it does to day. We have it on all hands. We have it in the press. Take up our daily papers and you find increasing space being given to the more important facts in connection with agriculture. The same thing is found in the most cultured magazines of our country. The press is disseminating this information. Reports are published of public meetings of farmers of all kinds. The result is that where formerly information was confined to a few it is now going to all our people.

All these together are bringing about what we may call a revolution in connection with agriculture. What lessons can we draw from them? The first is simply this: It will not pay any dairyman to stand by and close his eyes to the state of affairs. We must recognize the fact that the condition of agriculture to-day is different from what it was fifty years ago, twenty-five years ago, or even ten years ago. Agriculture is developing, and, if we are going to keep up with it, we must recognize, first of all, that a great revolution is now in progress. The next ten years will show a greater development than the past ten years have done, and if you stand still you will be in the same position in a very few years that your fathers forty years ago were as compared with the agriculturist of to-day.

The second is that we ought to get right into harmony with this new development; we ought to place ourselves in alliance with it, so to speak. How can we do that? By associating ourselves with such organizations as we have here; by getting right into the current and taking advantage of it for improving ourselves in connection with this work. There are a hundred and one opportunities. Where our fathers had one advantage of this kind we have now twenty or more, and because of the many advantages we have, we are apt to overlook many of them.

The next point I want to bring out is one which will appeal to the townspeople as much as the country people. The new agriculture has brought our towns and cities and the country much closer together. There was a time, twenty-five or thirty years ago, when the farmers lived to themselves. They did not need to come to our towns and cities. The farmer produced everything that was necessary to sustenance, coming to the town, perhaps, when he was in need of tools, and taking care to go to the manufacturer for them. Not so now. He goes to the town or city, and, instead of going to the great manufacturing establishment, he goes to the dealer for articles probably made in these great manufacturing establishments; and week after week the butcher and baker drive out through the country. The fact is that the country is depending upon the town for a large part of its requirements, but perhaps more so is it the case that the town is depending upon the country for its requirements. There should be a heartier co-operation between the people of the city and town and the people of the country. We are here asking, what can we do to build up this business? Townspeople ask what they can do to induce some industry to locate in their midst, and sometimes after an industry has been secured, some other place will offer a bonus and it will move on. In many cases of course these things are more permanent. Yet all the time there has been lying around,

adjacent and tributary, an undeveloped industry, which after all is the most important factor in connection with the town or city. I think there ought to be more co-operation between the country and the towns and cities. The one cannot live without the other, and if the towns would turn their attention a little more to assisting the farmers, they would probably bring more business to themselves than in any other way they have ever tried. Now, for instance, the dairy industry around this Town of Cornwall is not what you would like it to be. Let me give you one illustration. In the adjacent counties of Leeds and Grenville the cheese factories alone bring to the farmers of those two counties over one million dollars a year; even in periods of depression I think it amounts to $1,250,000. I do not think there is any industry at all to be compared with that so far as the effect is concerned upon the prosperity of the towns and villages in those counties. Are you going to stand idly by and say, dairying is a fine thing; it has done magnificently for some counties; it has built up some counties of the west, such as Oxford and Perth? Why do not the farmers of this county take hold of this thing and build it up—as it should be developed? I do not know that it ought to depend on the farmers altogether. I say the initiation might proceed right from this very place, where there are men of intelligence and men of means.

Something was said about the great benefits of uniting the people of this country. I think what I have said just now is exactly along that line. You will find, with the farmers and people of the towns and cities joined together to develop our industries, that thereby unity of one section with another will gradually spread from one end of the country to the other, until we have a country, not divided into factions and fractions, but united and prosperous.

There is another thing. In these days when one hears so much about wars and rumors of wars, you never hear anything of that kind proceeding first from the rural classes, because you have, in agriculture, interests which anchor down the population to the land; but it is where you have a large floating population blown about by any little wind, that trouble always begins. It is exceedingly important that we anchor down to the land carefully, firmly and well, the farmers of this country, and there is no way that can be done so well as by making them take an increased interest in their work.

You show to-night by your presence here that you are entirely in sympathy with this work. It is possible this Association may never come back to Cornwall, and probably not for a long time, and I say that the people of Cornwall and vicinity have during this convention one of the opportunities that come but seldom to a people. The effects of such meetings, financially, mentally and morally, cannot be measured simply by the time they take or by the people who come out to them. I have no doubt if we came back here next year, this hall would be crowded, and why is it not crowded? A man told me the other day that he believed one reason why these meetings were not better attended was that too much was being done for the farmers; that if less were given to them probably they would appreciate what they got a great deal more. Now, to you this Association extend their very best wishes for your future progress, and hope that this meeting may be the beginning of an increased interest in your work; that you will take a new start from it; and if ever the Association comes back to see you again I hope that by your general prosperity it will be noticeable that good has been done by the holding of the convention of this Association here upon this occasion. (Applause.)

THE CULTURE OF HOUSE PLANTS.

Mr. James Fletcher, Dominion Entomologist, Ottawa, then delivered an interesting address on the culture of house plants. He spoke on the same subject at the Eastern Dairymen's convention and his address on that occasion is given in the report of the Eastern convention. (See page 20.)

Cordial votes of thanks were tendered to the Chairman, the speakers of the evening and the Knox Church Quartette, the audience united in singing the National Anthem, and the convention adjourned at 11.30, to meet again on the following morning.

THIRD DAY—MORNING SESSION.

The convention resumed at 9.30.

AUDITOR'S REPORT.

Mr. R. G. MURPHY presented the Auditor's Report for the year 1895, as follows :

(See appendix, page 272.)

The report was adopted on motion of Mr. R. G. MURPHY, seconded by Mr. J. VANCE.

MR. BRONSON'S FARM.

Mr. JOHN SPRAGUE, Ameliasburg, said : " I wish to return thanks for being driven around the town and up to the farm of Mr. Bronson. I would remark here that I found the stables of Mr. Bronson in nice condition, and I had some conversation with him in regard to the cultivation of silo corn. He uses what he calls a ' weeder,' which pulverizes the top of the ground thoroughly. It is a question whether we should cultivate any deeper than the top. He had a great supply of corn. It was planted on the 8th of June and cut on the 15th September, when, he says, it was mature. I have had no such experience as that."

Mr. YOUNG : What is the variety ?

Mr. SPRAGUE : The corn is the Early Mastodon. I have found no corn that would mature under 130 days.

INSTRUCTOR'S REPORT.

Mr. MARK SPRAGUE, was then called upon to read his annual report, which is as follows :

It is with pleasure I present to you my report for the year just ended. We commenced visiting creameries on 28th March, giving attention to those just starting, or new creameries. Of these there were nineteen, eighteen separator, and one cream gathering. This occupied my time fully to June 3rd., after which I travelled from one to the other in the regular way of instruction and milk testing up to the first week in December.

There were numerous calls throughout the season from creameries that unfortunately had met with some mishap to the machinery. All of these were given prompt attention, and with as much haste as the railroads and the bicycle rendered possible.

There is one very satisfactory advancement which I am pleased to report, and that is the large percentage of creameries that are paying for milk according to the butter-fat value. With the closing of the season there were only nine creameries pooling their milk. My argument and aim, when visiting the various creameries, have been directed toward

introducing this system, believing the benefit to be two-fold: First, the patron gets just and proper reward for his milk. On the other hand, the patron's interest in his milk to be paid for by the fat value is increased, and he is stimulated to give the milk his very best attention that it may be in a condition on its arrival at the creamery to afford a reliable sample, so that the test recorded may show as large a per cent. as possible. While the patron is doing this, he must send a better milk to the creamery.

The change in the system of paying for milk according to the butter-fat value, from pooling it, in most localities is very difficult to introduce successfully, but I think the benefits therefrom will well repay any creamery man. Many instances can be pointed out where the average per cent. of fat of the total milk received at creameries has surprisingly increased after adopting the system. Wherever the paying for milk according to the butter-fat value has been introduced, the demand for the instructor to test the milk to detect adulteration, if there previously was any, will cease.

The patrons, as a rule, look on the Babcock test suspiciously, not so much with reference to the test as with reference to the ability of the operator. They believe it to be much more intricate than is really the case. What my suggestion would be in these cases, is to make the patrons familiar with the operating of the Babcock test by calling them together from time to time and educating them to handle the test for themselves, bringing samples of milk from their individual cows, thereby disabusing their minds of the idea that the Babcock test is difficult to operate, and securing their implicit confidence by giving them more light.

I am more and more convinced that the brightest days for the Ontario Creameries' Association are just dawning, and the ten years of its life have been only preparatory, so to speak, and those who have been so untiring and devoted to its work will be amply repaid just to see and know of the great progress that will be made in the ten years to come. The butter-makers' ideas and education are being put upon a systematic basis throughout our Province, that all our butter may be uniform in quality and color. The different colors, degree of salting, style of package, etc., required by different markets are now carefully studied, and confidence in Canadian butter is growing.

The salesmen and dealers have learned also that this superior and delicate butter needs to be put on the market while fresh and new, or a suitable place must be provided to keep it at a low temperature until it is put into consumption. This is not all. The Dominion Dairy Commissioner is bending his energies to assist the Creameries' Association and the buttermen and farmers engaged in this great industry by endeavoring to bring the British markets right to our door; and it is pleasing to all to know that his efforts are being crowned with success. And may the Creameries' Association be still more diligent and determined in the good work, and our Dairy Commissioner be spared to enjoy the great satisfaction of knowing that our labors are not in vain, and that the benefits derived therefrom are equally enjoyed by and widely distributed among our fellows.

Not wishing to take too much valuable time, I will conclude by thanking the Creameries' Association and creamery men of Ontario for courtesies extended me in the performance of my duties, and should I be again entrusted with the instructorship, I will try and be worthy of your confidence.

The PRESIDENT: We have listened with a good deal of pleasure to the Instructor's report, and I may say that we have had the greatest satisfaction from having a competent man in charge of our creameries—a man who has been devoted to the work, and who has given the best of service to the Association and all its members. From all parts of Ontario come the same report, that he is a most painstaking, diligent and competent man.

Mr. J. S. PEARCE moved, seconded by Mr. R. G. MURPHY, the adoption of the report, which was carried.

BUTTER-MAKING EXPERIMENTS.

Mr. H. H. Dean, Professor of Dairying at the Ontario Agricultural College, Guelph, was introduced, and said: I regret exceedingly that my work at the College prevented me from coming here before to-day. I could not do so because the Dairy School opened yesterday. I understand that you have already been talked to so much that you are barely alive, and I shall not inflict a long address upon you this morning, but will merely give you an outline of some things I had intended saying in connection with some experimental work in butter-making at the Agricultural College.

The first thing I wish to do is to give you the results of the testing of our dairy cows. I find that as a result of testing this past season the best cow we had in our dairy —and we had about twenty-five—gave us 10,090 lbs. of milk, containing a little over 370 lbs. of butter fat, which is equal to over 400 lbs. of butter. In our calculations of butter from fat we add ten per cent. to the butter-fat, so that this cow has given us over 400 lbs. of butter. The poorest cow was one that gave 3,776 lbs. of milk, containing 130 lbs. of fat, which is equal to about 140 lbs. of butter. Now, notice the difference between the 400 lb. cow and the 140 lb. cow. The latter we sold to the butcher. My judgment is that he who is improving his dairy herd will always have some cows to sell to the butcher, and if he does not do so he is not making the best out of his dairy. He must be continually weeding out the poor cows as they deteriorate in milk yield. The only way to know a real good cow is to weigh her milk and test its quality by the Babcock tester. I have been preaching this for the last four or five years, and I feel the subject is so important that I would lay stress upon it this morning. Now, if you come up to our dairy you will see on cards tacked up at the head of the cows showing their names, the quantity of milk they have given, the number of days they have milked in a season, the number of pounds of butter they have given during the season; and I think if every dairyman would do that we would not have so many cows, but their quality would be very much improved. We have cows all the way between the 400 lbs. and the 140 lbs. I have mentioned. We have quite a number giving 6,000, 7,000 and 8,000 lbs. of milk. I repeat that no cow should be kept which does not give at least 6,000 lbs. of milk or make 250 lbs. of butter in a year. We have sold cows this year because they do not come up to the point required. Some people think that because they have some cows that give very rich milk they are the most valuable cows. It does not always follow that such are the best cows. For instance, one cow we had this past season has been testing as high as six per cent. of butter-fat. That was not, however, the best cow we had in our dairy by any means. There are three things that govern the value of a cow, the quantity and quality of her milk and the cost of the food she consumes. I can tell you the first two qualities of our herd, but I cannot tell you the third, for the past year. This present year we are weighing the food of each cow, and at the end of December, 1896, I hope to tell you just what the food has cost for each cow. Then, whenever we have got that with the other two I can tell you the relative value of each cow in the herd.

There is just one other topic that, perhaps, you have discussed already. Some say that if you feed the cows on rich food you will make their milk richer than it would be otherwise. All our cows get the same food, but in different quantities if they can eat it; yet we find there are just as many differences in the percentage of butter-fat as we have cows, or, in other words, no two cows give exactly the same quality of milk. Owing to this fact, and for other reasons, I conclude that the food has little effect on the percentage of fat in milk. The only case I ever heard of where the feed affected the character of the product was in that of a Texas man who was in the habit of giving his cow a bran mash, but one night he gave her a mash of sawdust, and on account of the hard times she thought she had to eat it. Next morning when milked she gave instead of milk a quart of shoe-pegs, a gallon of turpentine, and a bundle of lath. (Laughter.) That experiment cannot be repeated.

The next thing is with reference to tests in the creaming of milk. For three years we have been making experiments with deep and shallow setting and with the

separator. The separator has always given us the best results, so far as the loss of fat in the skimmed milk goes. The pounds of milk required to make a pound of butter this past year were: From the shallow pan, 25.05; from the deep setting, 24.47; from the separator, 23.91, all under the best conditions. Now, not only did we get the best results, so far as the loss of fat in the skimmed milk goes, but taking the average quality of the butter it has been slightly better from the separator. Sometimes the butter made from the shallow pan would be ahead of that from the deep, and some times the deep setting would be the best, but on the average that from the separator was the best. How was that? In hot weather we found it hard to make good butter from cream raised with the shallow pans. In cool weather we can make just as fine butter from the shallow pans as from any system, but when the weather gets hot they are "not in it." Sometimes the butter was extra in quality from the shallow pans when the cream had been kept cool.

The average time required to churn the separator cream was twenty-seven and a half minutes; from the other methods, thirty-two minutes. From my trip to Denmark, and what I observed there, I am inclined to think that one of the reasons why Danish butter holds the high price and position in the market that it does is from their almost universal use of the cream separator. I have nothing to say against cream gathering creameries. They are suited for some sections, but I hope to see us adopt the separator system entirely some day. At a former meeting I discussed these two methods of conducting creameries, but, as I have said, I believe the preference which the Danish butter enjoys comes from the large use of the separator in its manufacture. Why? Because the maker has control of the cream from the time it comes from the milk, and I think he can make a larger average of good butter in a year than when the farmers skim the milk at home.

Now, a word as to one or two conditions in connection with the use of the cream separator. We have been creaming milk at different temperatures to see which was the best temperature. We made twenty-eight experiments from April to October. When the average temperature was 82 2 degrees the loss of fat in the milk was .09, and the per cent. of fat in the cream 26.44. We increased the temperature until the average was 118 degrees, and the per cent. of fat was slightly less in the skim-milk (.06) and slightly more in the cream (30.9). The higher the temperature of the milk, the higher was the percentage of fat in the cream, other conditions being equal and the speed and feed of the separator being constant. It is just a question whether it would pay us to heat to 100 degrees or over except in winter, because it means expense to heat the milk and to cool the cream, but with some kinds of machines I believe it would pay before separating to heat it higher than eighty-five degrees, which is the common temperature.

Another point we have been experimenting upon this year was to see the loss of fat in skimmed milk from milk having different percentages of fat. We took milk in which the average percentage of fat was 4.18. When the whole milk tested 4.18 per cent., there was .08 per cent. of fat in the skimmed milk and 26 47 per cent. in the cream. When the whole milk averaged 3.30 per cent. of fat, there was .09 in the skimmed milk and 21.64 per cent. in the cream. The volume of cream obtained was about the same whether rich or poor milk was separated. One hundred pounds of 4.18 milk gave 15.1 lbs. of cream, and the same quantity of 3 30 per cent milk 14.7 lbs. of cream. But the per cent. of fat in the cream was greater from the rich milk. The volume of cream obtained from a vat of milk is governed largely by the speed and feed of the machine or the way it is set, and does not depend very much upon the per cent. of fat in the whole milk, but the richer the whole milk the richer will be the percentage of fat in the cream. That is a point which we want to improve upon, *i.e.*, to get richer cream in order to get the best results of churning. The best results are obtained in our experience from cream having twenty-five to thirty per cent. of fat.

For three years we have been experimenting on the effect of churning sweet cream. Three years ago there was talk by advocates of the butter extractor to the effect that butter made from sweet cream had a chance of two markets—you had a chance of the

market for butter made from sweet cream and if not sold you might allow this butter to ripen and sell it as ripened cream butter. Our experiments prove that this is not the case. The butter from sweet cream when first made has a nice, sweet flavor, but at the end of ten or twelve days it goes off flavor and at the end of three weeks is rancid. So it lacks keeping quality, and you do not have a chance of two markets. Samples of sweet cream butter that we sent to some of our customers were liked very much, indeed. I believe if we could get it on the English market two or three days after churning it would be all right, but that is not possible. We have to suit the taste of our customers. An average temperature of forty-five degrees or below is necessary to get the best results in churning sweet cream, and from an hour to an hour and a half is needed for churning. This plan gives better butter and occasions the least loss of butter in the butter-milk.

We have been making some experiments this past year on the effect of starters and ripening cream, and perhaps that question has been discussed more than any other in connection with butter-making. We have heard a good deal about Conn's bacteria No. 41. At first they sent it out in a sort of a semi-solid condition, and we found that what we got in that shape was more or less mouldy though the results were very good. This (producing sample) is the first we have got in the powdered form. They claim it will give better results. You will notice the Wisconsin Dairy Station has taken up this matter, and given an unfavorable report on this starter. They say it contains a very small percentage of the B. 41. The results of these experiments can doubtless be obtained in reports by writing there. If anything like that comes out and is boomed, I think the experimental stations should take it up and see whether there is anything in it. If it is something good the people should know it. If worthless, they ought also to know it. The results of our experiments are as follows: The first tube we got gave a decided flavor to the butter, different from anything we had hitherto had in connection with our work, but we found this flavor disappear very quickly. At the end of a week it was all or nearly all gone. Now, on one occasion, about a month after we got the first tube, a starter prepared in the ordinary way from milk gave the very same flavor. I can not account for that unless some of the bacteria from the tube got into the milk. Now, this is one of the things we have only started in upon. You will pardon me if I refer again to the work of Denmark in this connection. I was surprised at the number of creameries there pasteurizing their cream and using these starters, and the number doing this is increasing. They are giving satisfaction. All the pasteurizing apparatus I have seen in this country seems to be so clumsy that I do not know whether they shall ever come into general use or not. By pasteurizing we mean heating the milk to about 160° so as to kill germs. The milk or cream is afterwards cooled. After standing five hours they put in these cultures. The maker has always two sets of cultures on hand in case that one fails or goes wrong. If one had a bad flavor he would not use it, but would use the other. The bad flavored one would spoil his butter. He overcomes the risk of spoiling his cream by having two. We have done practically nothing in this country in this direction, and it is one we must do something in if we want to ensure the flavor. I recommend the following method of preparing a starter: Take some fresh-skimmed milk from a cow that has been milking a short time, heat to 171°, let stand twenty minutes, cool to eighty-five degrees and get a starter of good flavor and propogate that from day to day so long as it retains good flavor. I think that is the best plan of getting a starter.

Now, about washing the butter. We have made a number of experiments during the past year on the effects of washing butter. Why do we wash butter? I think we have been making a mistake by washing too much. In Denmark they do not wash their butter at all. When it gets to be about the size of grains of wheat they add a small percentage of water then churn it a little longer and dip the butter out of the buttermilk with a hair sieve. The milk is then pumped up into a tank. That is all the washing the butter receives. Why do we do it then? Well, we have been told that unless we wash butter it will not keep. If we make it to eat at once and not to keep I would say wash very little or not at all. That is one reason why the Danish butter is not washed. It is not spoiled before reaching the British market.

How about keeping it? We have found very little difference in the keeping quality of that butter as compared with butter made in the ordinary way, and I am just a little doubtful at the present time whether washing does affect the keeping quality to any large extent. I hope after some more experiments to have that point settled.

A few days ago I went into a commission house in Toronto, and the merchant said one of our students is sending butter to him which is not right. On looking at it, I found it was crumbly or short in the grain. I said to him that the student was washing with too cold water. I believe that is the result always, especially in the winter time. There is no need of washing with such cold water as is commonly used.

Now a word as to the working of butter. Should butter be worked once or twice? I was surprised to find that the Danish method is to work it twice, and, in many instance three times. They gave this as the reason: They said there was a complaint that Danish butter had too much water in it; the English people have found out that a shilling a pound for water was too high. They found as high as twenty-one per cent. of water in some butter at Copenhagen, and owing to this complaint they are working the butter once and twice and even three times, and the average percentage of water is now down to fourteen and a half per cent. There is strong talk in England of having butter containing more than sixteen per cent. branded as adulterated.

Now, as to salting butter. Canadian butter has nearly all too much salt in it for the finest English trade. From three to five per cent. of salt is about right for English taste. We have been putting in ten per cent Half an ounce to the pound is enough.

As to the packages, we have not studied this question of package and must get same kind of a package that will not give the butter a woody flavor I do not think that lining the package with parchment paper will prevent this. In one or two experiments where packages were lined with paraffine wax the results seemed to justify the conclusion that we have solved the difficulty to a large extent. We are going to make the experiment of sending twenty boxes to the English market and having them lined with paraffine wax this present winter. I think paraffine wax will prevent the woody flavor, because in a package lined with it, which we kept for a month we found no such flavor, and no leakage. Another point is to get the butter packed solidly in boxes. Mr. Davidson, of Glasgow, said to me that the Australian butter was in his opinion put into the boxes under pressure. I would like to see some contrivance used for this purpose similar to the cheese press. British buyers like, when they turn out the butter, to have it just like a block of marble. If there are any holes in the butter the butter-milk collects in them which gives a bad appearance to the butter. I hope during the coming year to make some experiments along that line. (Applause.)

Mr. Murphy: Don't you think that short-grained butter could be produced by the milk being chilled before it is put through the separator?

Prof. Dean: I never thought of that. It might be, but I think it is largely caused by washing it with cold water.

Mr. D. J. McLennan: What breed is the cow which gave 10,000 lbs of milk?

Prof. Dean: Holstein.

Mr. McLennan: What was the feed? Did you feed her bran the whole summer season.

Prof. Dean: Not at all. Perhaps with the exception of a month or six weeks, we did not give her any bran in the summer.

Mr. Croil: How much water is allowed in butter in England?

Prof. Dean: All having over sixteen per cent. is objected to to-day. They are talking of branding all having over sixteen per cent. as adulterated.

Mr. McLennan: Has salt anything to do with keeping qualities?

Prof. Dean: I think it has.

Mr. McLennan: Would the amount of salt you put in have anything to do with it. Suppose we put in more than half an ounce what would be the effect on the keeping quality?

Prof. Dean: We have made no exact experiments yet on the point raised.

THANKS TO THE TOWNSPEOPLE AND PRESS.

Moved by R. G. Murphy, seconded by R. J. Graham, That the thanks of this Association be tendered the citizens of Cornwall for their generous reception; to the railways for reduced fares; and the press for full reports of our proceedings. Carried.

CLOSING PROCEEDINGS.

Prof. Barré, of Winnipeg, followed with a few remarks in support of Prof. Dean's statements about butter-making.

Mr. John H. Croil, of Aultsville, spoke in favor of sweet cream butter.

Mr. Thos. J. Dillon, Superintendent of Dairying for P. E. Island, on being asked by the President to address the meeting said: It would be unfair to the audience for me to attempt to address them without some preparation. I would just say, however, that I would like to see a better package for shipping butter than any we have at the present time. Whitney Bros., of Woodstock, Ontario, are getting up a very nice package, but it is too expensive for shipping long distances. I think if some of those interested in the trade would set their minds to work they could devise a more suitable package for shipping to warm climates. With regard to creamery plant, if the cream vats were put on wheels similar to those on trucks, used for handling baggage and express at shipping places, they would be much more convenient. The wheels would need to have a broad face of seven or eight inches so they would not cut the floor. They could then be run up to the churn, which should have a trunk cover. A tin bridge extending over the edge of the churn and end of cream vat could be used, and the cream dipped with a flat-sided pail into the churn, which is the quickest and most economical way of doing it. This would do away with the perfection gates that are generally used on cream vats, and which add considerably to their cost. There will be no leaks round the gate, and when the lower part of the vat requires cleaning it will be more apt to be done as the pan can be lifted out with very little trouble. In my experience with churns, I have found the trunk covers to give the best satisfaction. These churns are easier made tight, and are much more convenient for taking the butter out of. Where separators are used in a factory already equipped for cheese making, it would be a great convenience to have them eight or ten inches lower than those that are being made now. If they were lower a small feeding vat holding, say, 400 lbs. of milk, could be placed across the cheese vat in which the milk is received and heated. The milk could then be dipped, or otherwise elevated, into it, and let run direct to the separator.

The President, in bringing the convention to a close, said he regretted that the farmers of the surrounding townships had not turned out in larger numbers to hear the splendid addresses delivered by the leading men of the dairy industry on this continent. He would like to see the people of the town and country mingle more together. The Association has been invited to hold their next convention in London, Hamilton, Fergus and other places, but this was a matter which would be decided later on. It had been intended to hold an afternoon session, but judging by the attendance the people had had enough of it, and they would now adjourn. Before bringing the meeting to a close he desired to express his regret that the recent stirring events at the capital had prevented Dr. Bergin, M.P., and Major McLennan, M.P., from attending the convention.

The convention then adjourned.

APPENDIX.

LISTS OF MEMBERS

1896

DAIRYMEN'S ASSOCIATION OF EASTERN ONTARIO.

Name.	P. O. Address.	Name.	P. O. Address.
Allen, H. M	Port Hope.	Hallowell, Jno. E	Stirling.
Ashley, H.	Belleville.	Hoard, B. E.	Campbellford.
Andress, J. P	Peterboro'.	Howard, Theodore E.	Toronto.
Anderson, James C.	Norham.	Hart, R. H.	Belleville.
Bird, Morden	Stirling.	Hay, G. A	Campbellford.
Brenton, F. W	Belleville.	Harrison, G. H.	Crookston.
Brentnall, E. P	Belleville.	Henderson, Ernest G	Windsor.
Buchanan, Robert	Westmeath.	Hubel, Sylvanus	Glenross.
Blezard, Thos. M.P.P	Westwood.	Honey, R	Brickley.
Bensley, W. W.	Warkworth.	Howey, H.	Newburg.
Bensley, G. H.	Warkworth.	Hoard, Wallace W	Hoards' Station.
Burgess, D	Havelock.	Holcomb, Wellington	Havelock.
Bensley, George	Warkworth.	Hughes, Thomas	Burnbrae.
Black, D	Campbellford.	Hume, Brothers	Campbellford.
Blute, Thomas	Campbellford.	Irwin, James	Sarginson.
Bensley, H.	Warkworth.	Jardine, J. W.	Bartonville.
Carlaw, T. B	Warkworth.	Jibb, Joseph	Fenella.
Craig, R. A	North Gower.	Johnston, William	Havelock.
Craighead, James	Campbellford.	Johnston, Joseph	Havelock.
Clarke, W.	Meyersburg.	Johnston, D	Campbellford.
Cleugh, James	Sarginson.	Kidd, Edward	North Gower.
Carlow, D.	Warkworth.	Kline, F. E	Lakefield.
Crediman, Geo	Norham.	Kerr, Duncan	Campbellford.
Clark, G. M.	Warkworth.	Keville, C. F.	Peterboro'.
Cook, George	Trent Bridge.	Kline, E. E	Fraserville.
Carlaw, H. J	Warkworth.	Kerr, J. A	Ivanhoe.
Cock, William	Campbellford.	Kitchen, J	Havelock.
Clark, John	Box 250 Campbellford	Ketcheson, D. H	Menie.
Dargavel, Jno. R	Elgin.	Kelleher, John	Campbellford.
Derbyshire, D.	Brockville.	Lowrie, John	Frankford.
Darling, D.	Morganston.	Logan, A. A	Morrisburg.
Diamond, E	Campbellford.	Lottridge, James M.	Hamilton.
Dilworth, Thomas	Meyersburg.	Line, McDonald & Co	London.
Donald, Peter	Campbellford.	Labatt, John	Campbellford.
Douglas, Jno. H.	Warkworth.	Loutitt, Charles	Campbellford.
Drury, W.	Warkworth.	Lowrey, J. G. B.	Frankford.
Dickson Brothers	Campbellford.	Lane, John	Big Springs.
Eager, George	Kemptville.	McCargar, J	Belleville.
Eager, William	Morrisburg.	McTavish, John	Vancamp.
Ewing, J. B.	Dartford.	McKay & Co	London.
Ewing, Peter	Warkworth.	McComb, S. S.	Springbrook.
Elliott, W. G	Thomasburg.	McCann, J. D.	Perth.
Free, Abraham	Campbellford.	McCullough, Geo.	Perth.
Fairman, John W	Godolphin.	McRae, J. R	Campbellford.
Ferris, J	Campbellford.	Meiklejohn, R. W.	Sarginson.
Free, H. R.	Cold Springs.	Magrath, W. J	Belleville.
Fowlds, James	Campbellford.	Murphy, R. G.	Elgin.
Fowlds, H. W.	Hastings.	Mulloy & Co	Winchester.
Fraser, Hugh	Havelock.	Munro, William	St. Elmo.
Frederick, R. M.	Campbellford.	Mullett, James	Castleton.
Goodman, Joe	Toronto.	Moore, James	Hastings.
Gillespie, C. S.	Campbellford.	Miles, C	Hastings.
Gallagher, P	Warkworth.	Morrison, John	Burnbrae.
Givan, John	Campbellford.	Mulhern	Campbellford.
Graham, G. A	Westwood.	Morton, E. T.	Campbellford.
Gibson, James	Campbellford.	Madden, E. J	Newburg.

LIST OF MEMBERS.—*Continued.*

Name.	P. O. Address.	Name.	P. O. Address.
Mallory, C. A	Warkworth.	Stewart, William, Jr	Menie.
Moore, William	Norham.	Shillinglaw, Jas	Burnbrae.
Maynard	Campbellford.	Smith, Charles	Campbellford.
Paper and Egg Case Co	Campbellford.	Stillman, William	Campbellford.
O'Grath & Co., L	Montreal, Que.	Strachan, James	Menie.
Olmstead, G., & Co	London.	Shannon, James	Campbellford.
Oakley, Daniel	Norwood.	Spaulsburg, Jas. F	Warkworth.
Owens, C. L	Campbellford.	The Rathburn Co	Campbellford.
O'Connell, James	Warkworth.	Taylor, Joseph	Campbellford.
Oliver & Boyce	Warkworth.	The Winslow B. & M. Co	Port Hope.
Potter, A. J	Rossmore.	Thompson, C. W	Cooper.
Peters, Alex	Havelock.	Thompson, Thomas	Madoc.
Purvis, A. P	Maxville.	Tait & Douglas	Campbellford.
Pirie, A	Campbellford.	Vandervoort, S. T	Sidney Crossing.
Phillips, W. H	Frankford.	Valleau, J. W	Campbellford.
Patchet, Charles O	Maynooth.	Waters, James & Bro	Campbellford.
Publow, G. G	Perth.	Wade, Henry	Toronto.
Rutherford, John	Campbellford.	Whitton, James	Wellman's Corners.
Redden, H	Campbellford.	West, E. C	Campbellford.
Raney, Thomas	Campbellford.	Wood, David	Peterboro'.
Richardson, W. H	Madoc.	Ward, R. W	Wallbridge.
Renwick, George	Lang.	Weir, John	Lang.
Runciman, George	Warkworth.	Watson, S	Trent Bridge.
Roberts, Christopher	Burnley.	Walker, Thomas, Jr	Hoards' Station.
Stewart, Jas. K	Sarginson.	Walker, H. J. & Son	Warkworth.
Soper, H. L	South Mountain.	Walker, Thomas, Sr	Menie.
Sarles, Joseph G	Chatterton.	Wilson, Francis	Rockdale.
Spence, S. S	South Dummer.	Wilde, Charles	Havelock.
Shannon, John	Campbellford.	Wood, F. W	Campbellford.
Scott, R	Meyersburg.	Walker & Co., R	Warkworth.
Symmons, Nelson	Meyersburg.	Young, Bayard	Napanee.
Skitch, Edward	Campbellford.		

DAIRYMEN'S ASSOCIATION OF WESTERN ONTARIO.

Name.	Address.	Name.	Address.
Adams, C. F	Trowbridge.	Bearss, T. M	Corinth.
Agur, E	Ingersoll.	Bell, A. E	Crown Hill.
Alderson, Thomas	Kintore.	Bell, A. T	Tavistock.
Allen, Edwin S	Box 233, Ingersoll.	Bell, E. J	Blandford Station.
Anderson, A. D	Wyoming.	Bell, J. W	Newmarket.
Anderson, Wm	Hickson.	Biffin, James	Bennington.
Angus, W. D	Newbridge.	Bigham, Joseph	Hickson.
Anstice, Chas	Springford.	Bigham, J. P	Dereham Centre.
Atkinson, W. J	Medina.	Bigham, W. R	Culloden.
Bagnell, A. W	Corinth.	Billings, J. S	North Ridge.
Baird, R	Chesterfield.	Biette, P	Chesley.
Baird, Thos. T	Crystal City, Man.	Blackmore, J. G	Drumbo.
Ballantyne, John	Pine River.	Blayney, John	Lynnville.
Ballantyne, R. M	Stratford.	Bray, Jacob	Listowel.
Ballantyne, T. J	Listowel.	Bonser, J. H	Straffordville.
Ballantyne, T	Stratford.	Boothe, G. E	Ingersoll.
Ballantyne, Jno	Fernhill, Ont.	Bothwell, Alex	Hickson.
Barr, Geo. H	Sebringville.	Bothwell, W. A	Hickson.
Barr, S	Mossley.	Bowie, J. T	Crampton.
Barry, T. D	Putnam.	Boyce, H. F	Ingersoll.
Barr, Wm	Sebringville.	Boyes, Frank	Nilestown.
Baskett, Miss Sarah	Ballymote.	Boyes, Geo. E	Evelyn.
Bates, E	Zenda.	Boyes, Wm	Nilestown.
Baxter, Jno	Brownsville.	Brayley, C. H	Marston.
Bayley, Wm	Bluevale.	Brett, W	Ingersoll.
Beaton, John	Alberton.	Briggs, James	Jonesdale, Wis.

LIST OF MEMBERS.—*Continued.*

Name.	Address.	Name.	Address.
Brodie, Geo	Gladstone.	Everett, Chas	Sebringville.
Brodie, John	Mapleton.	Facey, S. E	Harrietsville.
Brodie, Wm. A	Glanworth.	Farrell, P	Woodstock.
Brown, H	Beaconsfield.	Fax, Arthur	Springford.
Brown, James	Ingersoll.	Ferguson, W. J	Ingersoll.
Brown, S. P	Birnam.	Findlay, J. H	Bright.
Brown, M. R	Appin.	Fisher, J. J	Stratford.
Brown, R. W	Stratford.	Flack, Samuel	Lavender.
Budd, George	Sweaburg.	Ford, E. G	Lynn Valley.
Burgess, R. S	Burgessville.	Fotheringham, J. W	Caledonia.
Burrell, D. H. & Co	Little Falls, N.Y.	Frame, Chas	Avonton.
Butler, Wm	Dereham Centre.	Fraser, John	Ethel.
Caddy, Thomas	Ingersoll.	Fulton, Jno	Freelton.
Calder, A. G	Winthrop.	Galloway, George	Ingersoll.
Campbell, A	Thedford.	Garbutt, Chas	Carlingford.
Campbell, D. P	Thedford.	Gardiner, R. M	Valetta.
Campbell, W. S	Brantford.	Garnham, C. R	Straffordville.
Casey, Wm	Potsdam, N.Y.	Garnham, E. A	Straffordville.
Casswell, J. N.	Dutton.	Garnham, S. H	Straffordville.
Chalmers, A	Monkton.	Geary, Jno	London.
Chalmers, D	Poole.	Gibbon, Oliver	Norwich.
Chown, Richard	Holiday.	Gibson, J. S	Rocklyn.
Chown, W. J	Elimville.	Gibson, Thomas	Fordwich.
Clancey, A	Rockwood.	Ginther, Ezra	Winger.
Clark, Alex	Shakespeare.	Gilmour, Jno	Nilestown.
Clarke, James	Vienna.	Goodhand, G. E	Milverton.
Cleland, James	Listowel.	Gracey, A. E	Curries'.
Coleman, James	Staffa.	Grant, Alex. W	Montreal, Que.
Connolly, B. J	Kintore.	Grant, Jno. C	Peterboro'.
Connolly, James	Alsfeldt.	Grant, Samuel	Turin.
Cook, G. J	Ingersoll.	Gray, A. W	Stratford.
Cooper, C. R	Toronto.	Gray, James A	Atwood.
Copeland, H. W	Wyebridge.	Green, P. H	Sheffield.
Copeland, J. W	Eastwood.	Grieves, Jas. S	Wyandotte.
Corless, J. G	Burgessville.	Grieves, Thomas	Wyandotte.
Corrigan, Philip	Arkona.	Griffith, A	Thorndale.
Cosh, Newton	Woodstock.	Hallman, Josiah	Washington.
Coulter, James	Walkerton.	Harcourt, Geo	St. Anns.
Cousins, G	New Hamburg.	Harris, A. M	Lakeview.
Crew, Dexter	Wheatley.	Harris, Emerson	Verschoyle.
Crosby, Jno. T	Marden.	Harris, W. W	Rothsay.
Cuddy, Robt	Woodstock.	Harrison, Herbert	Kincardine.
Cuthbertson, J	Wellburn.	Hart, J. P	Woodstock.
Dalton, W. H	Bryanston.	Hartley, J. D	Brantford.
Dawson, Robt	Walkerton.	Hatch, S. W	Lavender.
Day, H. F	Thamesford.	Hately, Geo	Brantford.
Dempsey, D. A	Stratford.	Hegler, J. C	Ingersoll.
Dennis, Jno	Corinth.	Henderson, E. G	Windsor,
Dent, A. S	Woodstock.	Henderson, Joseph	Vyner.
Dick, Norman	Mabee.	Henderson, J. T	Pine River.
Dickson, Wm	Atwood.	Hill, J. R	Woodstock.
Dillon, T. J	Charlottetown, P.E.I.	Hodson, H. A	Montreal, Que.
Dobbin, R. O	Waterloo.	Holland, B. A	Culloden.
Dobie, R. J	Baden.	Hollis, W. T	Atwood.
Dodds, James	Brigden.	Holmes, Geo	Thamesford.
Downham, Peter	Innerkip.	Holmes, J. L	Newton.
Duckfall, W. C	Glenallen.	Holmes, J. W	Dunnville.
Dunn, Ed. H	Evelyn.	Holmes, Wm	Otterville.
Dunn, J. P	Ingersoll.	Hoover, A. E	Upper.
Dunn, J. S	Woodstock.	Hoover, Ed	Selkirk.
Dunn, Thos	Embro.	House, R. H	Tilsonburg.
Durst, Fred	Canboro'.	Huggins, J. R	Beachville.
Eagle, Harold	Attercliffe Station.	Hunsley, Thomas	Beachville.
Easton, R	Paris.	Hunter, Ed	Woodstock.
Eccles, Jno	Kinkora.	Hunter, Geo. L	Waterford.
Edgar, Wm. A	Culloden.	Hunter, Samuel	Rockton.
Edwards, W. O	Box 483, Ingersoll.	Hurlburt, W	Hawtrey.
Elliott, James	Tilsonburg.	Impett, Thos	London West.
Engrem, E. M	Toronto.	Inman, P	Cottam.

LIST OF MEMBERS.—*Continued.*

Name.	Address.	Name.	Address.
Ireland, Ernest	Bright.	Manning, N	Uttoxeter.
Ireland, James	Beachville.	Mannel, H.	Hollen.
Ireland, Robt	Beachville.	Manser, D. A	Brunner.
Isaac, Jno. R	London.	Marshall, Arch	Puslinch.
Isard, J. S	Paisley.	Marshall, Robt	Lakeside.
Jackson, W	Belmont.	Marshall, J. B	Princeton.
Jackson, Miss Lizzie	Petrolea.	Mason, S. C	Bothwell.
James, Jas. A	Nilestown.	Mayhew, J.	Renforth.
Jenkins, Chas	Thamesford.	Maynard, David	Drumbo.
Jenvey, Geo	Ingersoll.	Medd, W. G	Constance.
Jickling, Thomas	Listowel.	Menzies, Geo.	Molesworth.
Johnston, Ed	Holmesville.	Mercer, George	Thamesford.
Johnston, Robt	Bright.	Messer, Jno	Bluevale.
Karn, J. G	Woodstock.	Millar, J. F	Brantford, box 115.
Karn, James	Embro.	Miller, Anthony	Walmer.
Kenny, Geo	Snelgrove.	Miller, T. B	Kincardine.
Kerr, H. S	Corinth.	Mills, Geo	Thamesford.
Kidd, Martin	Aylmer.	Millson, A. E.	Lakelet.
Kitchen, Wm	Gobles.	Millson, Frank	Winthrop.
Knechtel, Moses	Tavistock.	Milne, R. R	Burgoyne.
Lackie, David	Lavender.	Miners, C. G	Tilsonburg.
Laird, S. W	Stratford.	Mitchell, Geo	Salford.
Lane, J. A	Wilcox.	Mitchell, J. W.	Dairy School, Guelph.
Laughlin, W. C	Dorchester.	Moffat, James	Carmunnock.
Leach, C. G	Eden.	Monk, Jno. A	Woodstock.
Leach, D. M	Eden.	Montgomery, James	Innerkip.
Leach, Samuel	Carlow.	Morris, Wm	Avon.
Leach, Z. A	Lucknow.	Morrison, Agnes	Newry.
Leak, F. A	Blytheswood.	Morrison, James	Henfryn.
Lee, S. R	Molesworth.	Morrison, Mary	Newry.
Leitch, A. W	Trowbridge.	Muir, J. B	Avonbank.
Lipsit, J. B	Straffordville.	Munn, Daniel	Windham Centre.
Lipsit, Louis	Straffordville.	Nancekivell, Robt	Ingersoll.
Lorch, A. C	Elmira.	Neill, Jno	Woodstock.
Luton, C. O	Lyons.	Neville, Wm. H	Cottam.
McAlpine, Jno	Culloden.	Newcombe, N	Britton.
McCallum, Alex	London.	Nicholls, E	Bergessville.
McCombs, J. A	Cathcart.	Nimmo, Ernest	Box 107, Ripley.
McCrimmon, S	Otterville.	Nimmo, Thos	Ripley.
McCrow, Robt	Princeton.	Noah, W	Crampton.
McDonald, Geo	Bluevale.	O'Flynn, J. J	Kinkora.
McEwan, F. S	Verschoyle.	O'Flynn, T	Kinkora.
McIllwrath, Jas. H	Bookton.	O'Grady, G. dec	Woodstock.
McIntyre, Alex., jr	Ingersoll.	O'Meara, Thos	Ingersoll.
McKay, A	Brooksdale.	Ormerod, Wm	Napier.
McKay, D. & A	Woodstock.	Pace, Calvin	Vienna.
McKee, E. A	Molesworth.	Paget, J. N.	Canboro'.
McKellar, D. N	Blythe.	Parr, Frank	Hampton.
McKenzie, Alex	Donegal.	Parker, A. A	Rockford.
McKenzie, Donald T	Lochalsh.	Parker, Fred	Braemar.
McKenzie, Geo. M	Ingersoll.	Parker, R.	Atwood.
McKie, Geo	Norwich.	Pate, James	Brantford.
McLaren, Jno. C	Stratford.	Patterson, Frank	Thamesford.
McLaren, Wm	Avening.	Pearce, Jno. S	London.
McLean, N	Listowel.	Pearson, Isaac	Fairground.
McMaster, Ferguson	St. Marys.	Pearson, Sidney	Cassels.
McMillan, D	Poole.	Penhale, R. A	St. Thomas.
McMunn, H. J	Wallace.	Peters, Oliver	Brunner.
McMurray, R. B	Gladstone.	Pettit, Chas	Nixon.
McNally, Thos	Otterville.	Pettypiece, Wm	Motherwell.
McPherson, Jno	Fingal.	Phelps, F. H	Eden.
McMylor, Thos	Vesta.	Phelps, L. L	Dereham Centre.
MacLaren, A. F	Stratford.	Platt, Jno	Salop, Eng.
MacLaren, Jas. B	Ingersoll.	Poole, James	Waba.
Maid, A. F	Winnipeg, Man.	Prain, Jno	Harriston.
Main, S	Sheffield.	Price, L. A	Mt. Elgin.
Mallory, T. C	Yarmouth Centre.	Proudfoot, Johnston	Avonbank.

LIST OF MEMBERS.—*Concluded.*

Name.	Address.	Name.	Address.
Prouse, Thos	Dereham Centre.	Stevens, H. B	Lambeth.
Pyke, H. R	Shakespeare.	Stevenson, H	Ingersoll.
Ralph, George	Glanworth.	Stevenson, S. K	Camlachie.
Raymond, Geo	Ingersoll.	Stewart, Wm	Hickson.
Revell, C	Regina, N.W.T.	Stone, E. J	Amherstburg.
Riach, F. C	Newry.	Stone, Geo	Courtland.
Rice, A	Curries'.	Stratton, R. W	Guelph, O. A. C.
Rice, F. A	Curries'.	Sutherland, Jas	Montreal, Que.
Richardson & Webster	St. Marys.	Swartz, W. J	Aylmer.
Richardson, David	Vandecar.	Swayze, Edward	Dunnville.
Riddell, A. D	Shakespeare.	Symington, J. W	Camlachie.
Riesberry, Jno	Bright.	Tackaberry, N	London.
Riley, C. W	Ingersoll.	Talbot, J. L	Lucan.
Rinch, E	Curries'.	Taylor, Henry	Simcoe.
Robertson, Geo. S	Lucknow.	Tehen, J. Theo	Otterville.
Robertson, Robt	Box 396, London.	Thomas, J. H	Ingersoll.
Robitaille, Joseph	Lafontaine.	Thompson, Frank A	Woodstock.
Robson, Wm	Campbell's Cross.	Thompson, James	Bothwell.
Rollings, Walter	Walsh.	Thompson, J. S	Belfast.
Rushing, Jno. W	Boston.	Thompson, R	Eastwood.
Rounds, A. D	Harrington.	Thompson, W. B	Brooksdale.
Sanderson, R. S	Sparta.	Tillson, E. D	Tilsonburg.
Schell, M. S	Woodstock.	Todd, J. E	Salford.
Schneider, L	Carthage.	Toppin, P	Mossley.
Schrumm, Alf	Bismarck.	Travis, C. C	Acacia.
Schuyler, W. H	Simcoe.	Treadgold, Geo	Lake Oak.
Scott, Jno. H	Cromarty.	Treffrey, C. E	Hawtrey.
Scott, Jno	Innerkip.	Treffrey, W. J	Hawtrey.
Sellars, T. B	Laurel.	Tremain, John	Forest.
Shantz, Emanuel	Wallace.	Tucks, Henry	Kelvin.
Shearer, W. C	Bright.	Tyndall, W. A	Monkton.
Shearer, W. R	Villa Nova.	Vance, Joseph	New Hamburg.
Sheardon, W	Verschoyle.	Vankleek, J	Listowel.
Shepherd, E	Jaffa.	Waddell, Wm	Komoka.
Sheppard, John	Bothwell.	Walker, Ed	Oakdale.
Shuttleworth, J. M	Bow Park, Brantford.	Walker, Geo A	Box 50, Dresden.
Sidmore, I. W	Mt. Elgin.	Wallace, Samuel T	Pownall, P. E. I.
Simister, R. A	Ingersoll.	Wardell, Thos	Woodstock.
Sinclair, James	Teeswater.	Waring, J. E	Newark.
Slaght, J. H	Glen Meyer.	Whaley, W. J	Dereham Centre.
Smith, Edward P	Sardis, B.C.	White, Harry	Hawkesville.
Smith, C. W	Centralia.	Whitelaw, Robt	Woodstock.
Smith, H. C	Grand View.	Whiting, Joel	North Ridge.
Smith, O. T	Binbrook.	Wilford, John	Brownsville.
Smith, R. S	Beachville.	Wilkinson, J. H	Verschoyle.
Smith, Reuben	Mt. Elgin.	Wieland, A. C	Montreal, Que.
Smith, S. A	Dorchester.	Williams, J. F	Ingersoll.
Smith, W. S	Stratford.	Williams, J. H	Paris Station.
Smuck, C. G	Tupperville.	Willoughby, W. G	Walnut.
Snell, Robt	Norwich.	Wills, Henry	Winger.
Southwick, H. A	Avonton.	Wilson, Hugh E	Arkona.
Spavin, Wm. W	Hagersville.	Wilson, C. C. L	Ingersoll.
Spicer, J	Harwich.	Winders, W. K	Springfield.
Stacey, Thos	Fullarton.	Wood, Geo	St. Marys.
Stacey, W. P	Summerhill.	Wordell, Jno	Springford.
Steinhoff, I. W	Stratford.	Wyles, W. J.	Woodstock.
Sterrett, W	Motherwell	Young, James	Thamesford.
Stevely, Samuel	London.	Young, T. E	Strathroy.

ONTARIO CREAMERIES' ASSOCIATION.

Name.	P. O. Address.	Name.	P. O. Address.
Abott, Chas	Exeter.	Kinsey, S. V	Bolton.
Allen, A. W	Toronto.	Levette, W. H	Exeter.
Baker. Frank	Aultsville.		
Balkwell, Geo	Port Elgin.	McCormick, Jas	Cornwall.
Barrie, S. M	Winnipeg, Man.	McCrimmon, D. W	Glen Roy.
Beckstead, Jos	Martintown.	McDougall, D. H	Martintown.
Bergan, John	Cornwall.	McEwing, Michael	Cornwall.
Bobier, A. Q	Exeter.	McGillis, A. D	Montreal, Que.
Boonson, G	Cornwall.	McHoover, J	Goldfield.
Brown, S	Crediton.	McIntosh, J. I	Toronto.
Brown, S. P	Brantford.	McLean, D. H	South Finch.
Brubacher, M	St. Jacobs.	McLennan, D. J	Lancaster.
Binion, W. C	Iroquois.	McLennan, D. N	Summerstown.
Bush, Elias H	Lunenburg.	McMillan, A. L	Newington.
Byers, G. H	Hawkesbury.	McPherson, Alex	Tay Side.
		McTavish, John	Seaforth.
Caloren, Geo	Iroquois.		
Campbell, A	Ormond.	Marjerrison, W. R	Apple Hill.
Carmichael, Jas	Arva.	Meen, Fred. W	Greenwood.
Carter, J. G	Nassagaweya.	Millar, Thos. J	Spencerville.
Clark, Geo. E	Martintown.	Muir, J. B	Avonbank.
Conroy, W. J	Summerstown.	Munroe, Chas	Ventnor.
Craig, J. A	Renfrew.	Munroe, D	Cornwall.
Croil, John H	Aultsville.	Murphy, R. G	Elgin.
Cunningham, A	Cornwall.		
		Pearce, John S	London.
Denike, S. W	Sine.	Pelow, Jos	Summerstown.
Derbyshire, D	Brockville.	Perrigo, G. W. & Co	Georgetown.
Devitt, W. J	Greenwood.		
Dillon, T J	Charlottet'n, P.E.I.	Randall, David	Ayton.
Dorion, F. A	Montreal, Que.	Reiner, J. G	Wellesley.
		Richardson & Webster	St. Marys.
Elliott, J. H	Chesley.	Robinson, W. T	Maple.
		Rorke, H J	Meaford.
Froom, F	Mille Roches.	Rutherford, W. D	Iroquois.
Gardner, James	Cornwall.	Snider, Mr	St. Jacobs.
Gardner, Archibald	Cornwall.	Smith, J. A	Martintown.
Gillespie, Ed	Cross Hill.	Spackman, E. J	Exeter.
Graham, R. J	Belleville.	Spear, M. L	Lisbon Centre, N.Y.
Green, F. L	Greenwood.	Sprague, Mark	Ameliasburg.
Gerow, F. W	Napanee.	Sprague, John	Ameliasburg.
Gerow, Frank	Napanee.	Sutherland, James	Montreal, Que.
		St. Thomas, Peter	Cornwall.
Halliday, W. A	Chesley.		
Hayes, John	Cashions Glen.	Tobin, T. M	Cornwall Centre.
Hayes, H. J	Glenroy.		
Hayes, Fred	Montreal, Que.	Vandervoort & White	Sidney Crossing.
Henrick, H. A	Headford.		
Hodge, Wm	Cornwall.	Walton, W. G	Hamilton.
Hodgins, A. S	Osnabruck Centre.	Wenger, A	Ayton.
Hodgson, H. A	Montreal, Que.	West, W. O	Avonmore.
Hutchison, C	Ottawa.	Wilson, Andrew	Montreal, Que.
		Wilson, Frank	Montreal, Que.
Irvine, Wm	Martintown.	Wilson, J. Lockie	Alexandria.
		Wood, W. D	Cornwall.
Jackson, Jas	Roebuck.	Wright, A. A	Renfrew.
Johnson, Geo	Yonge's Mills.	Wright, Geo. R	Cornwall.
Johnson, Chas	Athens.		
Jones, Geo. T	Cornwall.	Yellow, Thos	Exeter.
Kinnear, Henry	Grant's Corners.	Zinkann, J. N	Wellesley.

FINANCIAL STATEMENTS FOR 1895.

DAIRYMEN'S ASSOCIATION OF WESTERN ONTARIO.

Receipts.

Cash balance from 1894	335 10
Members' fees	213 25
Legislative grant	2,750 00
Proceeds from advertisements in programme for 1895	215 50
Part proceeds from advertisements in programme for 1896	10 50
Fines received 1895, per T. B. Millar	117 82
Inspectors' fees, 1894, received from factories	45 00
Inspectors' fees, 1895, received from factories	230 00
Expenses received *re* prosecution in 1894	11 60
City of Stratford grant, less banquet expenses	66 75
Secretary's travelling expenses for 1895, received from factorymen and others	34 00
Travelling expenses, 1894, received	12 25
Proceeds from sale of three Babcock Testers	23 35
Proceeds from note discounted March 11th	296 30
Proceeds from sale of cheese used at Stratford convention	2 00
Refund G. T. R. two tickets, Wingham to Kincardine	1 70
Total	$4,365 12

Disbursements.

Convention expenses:		
Speakers, services and expenses	$155 00	
Printing programmes and wrappers	144 50	
Printing badges and for ribbon	22 83	
Printing invitations, dodgers, etc	26 50	
Reporting	80 00	
Advertising	83 00	
Sundries	8 75	
		$520 38
Local conventions expenses		154 71
Directors' expenses		96 05
Office expenses and auditing		203 13
Printing prospectus and letter-heads		14 00
Secretary's travelling expenses for 1895		177 40
Inspector's travelling expenses for 1895 (part)		238 43
J. W. Wheaton, balance of salary for 1894		206 50
T. B. Millar, balance of salary for 1894		31 76
T. B. Millar, salary in full for 1895		800 00
J. W. Wheaton, salary in full for 1895		1,000 00
Expenses, delegates to Good Roads convention		21 85
A. Pattullo, allowance for postage, etc., 1894		10 00
Easy chairs presented to T. B. Millar		25 25
Mimeograph for secretary's office		15 00
Released note discounted March 11th		300 00
Cheese for object lesson at Stratford convention		6 30
John Podmore, expenses to Ottawa, 1885, *re* Dairy Legislation		26 00
Grant to Western Fair		100 00
Grant to Industrial Fair		50 00
Grant to Dairy Department Provincial Fat Stock Show		50 00
Supplies for inspector		2 80
Expenses *re* prosecution, 1895		16 00
H. White, expenses of visit to Aurora Factory		6 50
Balance on hand		293 06
Total		$4,365 12

Assets.

Balance on hand	293 06
Inspectors' fees, 1895, unpaid	35 00
Inspectors' fees, 1894, unpaid	15 00
Office fixtures	40 00
Total	$383 06

We hereby certify that we have examined the books and vouchers of the Dairymen's Association of Western Ontario for 1895, and find them correct and in accordance with the foregoing statement.

January 3, 1895

J. A. Nelles, }
J. C. Hegler, } Auditors.

DAIRYMEN'S ASSOCIATION OF EASTERN ONTARIO.

Receipts.

To balance on hand from last audit	$379 21
Membership fees	137 00
Legislative grant	2,750 00
Amount received from fines	474 00
Amount received from Napanee Board	200 00
Amount received from Kingston Board	200 00
Amount received from factory fees	1,444 10
Total	$5,584 31

Disbursements.

Grants to Fairs:	
Toronto Industrial Exhibition	$50 00
Gananoque Dairy Show	50 00
Expenses of conventions and regular meeting	446 50
Officers' salaries	170 00
Grant to Dairy School, Kingston	50 00
Directors' meetings, Toronto, Ottawa and Kingston	284 82
Postage and Stationery	6 00
Account of Western Committee	25 50
Inspectors' salaries and expenses:	
W. W. Grant	730 00
G. W. Bensley	725 00
G. Publow	900 00
J. D. McCann	486 00
A. P. Purvis	786 00
Reporting	75 25
Printing, $10.00; Acid, $14.00	24 00
Balance on hand	775 24
Total	$5,584 31

We hereby certify that we have examined the books and vouchers of the treasurer of the Eastern Ontario Dairymen's Association and find them correct and in accordance with the foregoing statements.

(Signed) Morden Bird, F. W. Brenton, } Auditors.

CREAMERIES' ASSOCIATION OF ONTARIO.

Receipts.

Balance from last audit	$168 33
Members' fees	64 00
Donations	3 00
Legislative grant	2,000 00
Advertising in programme	130 00
Total	$2,365 33

Disbursements.

Grants to exhibitions at Toronto and Ottawa	$300 00
Expenses for taking charge of butter at exhibitions	62 25
Officers' salaries	129 00
Directors' fees and expenses	281 36
Postage and stationary	10 00
Printing	130 00
Advertising	16 50
Lecturers' expenses	75 00
Inspector's salary	750 00
Inspector's expenses	341 75
Cost of reporting	80 00
Commercial ticket for instructor	10 00
Balance on hand	179 47
Total	$2,365 33

Examined and found correct.

R. G. Murphy, A. F. Mulhern, } Auditors.

REPORT

OF THE

SUPERINTENDENT

OF

FARMERS' INSTITUTES

OF THE

PROVINCE OF ONTARIO

1895-6.

(Published by the Ontario Department of Agriculture, Toronto.)

PRINTED BY ORDER OF
THE LEGISLATIVE ASSEMBLY.

TORONTO:
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1896.

CONTENTS.

	Page.
Letter of Transmittal	1
Superintendent's Report	3
Table giving Summary of Replies as to Cost and Management of Farmers' Institutes	4
Acts, Rules and Regulations	6
Duties of Officers	9
Rules Governing Delegates	17
Districts in which Farmers' Institutes may be Organized	17
List of Available Speakers for 1896-97	22
Domestic Economy	33
Institute Officers for 1896-97	35
Reports of Local Farmers' Institutes for the Year ending June 30th, 1896	38

APPENDIX.

SELECTED PAPERS READ AT MEETINGS OF INSTITUTES.

Educational Department	44
The Ontario Agricultural College: James Mills	44
The Cost of a Full Course at the Ontario Agricultural College: Judson F. Clark	46
An Agricultural Education: T. Frank Patterson	48
The Ontario Agricultural College: A. H. Christian	50
The Farmer and the Public Schools: A. McNeill	53
Agriculture in Public Schools: S. Rennie	56
Agricultural Department:	58
Fodder Corn Growing: M. Richardson	58
Water in Relation to Plant Life: Prof. J. Hoyes Panton	59
Enriching an Impoverished Farm: T. G. Raynor	60
The Farmers' Fertilizer: D. Z. Gibson	62
Lime as a Fertilizer: R. Harcourt	64
The Value of Agricultural Experiments: G. E. Day	65
Land Drainage: Thomas McMillan	67
Cultivation of the Soil: Wm. Rennie	69
Underdraining: Mungo McNabb	71
Fodder Crops: T. G. Raynor	72
Silo and Silage: A. H. Christian	74
The Cultivation of Corn: Robert Thompson	76
Corn and the Silo, or My Experience with Ensilage: George Donald	78
The Round (Stave) Silo: Joseph E. Gould	80
The Management of Farm Labor: John I. Hobson	83
Warming and Ventilating Stables: Prof. A. E. Shuttleworth	86
Weeds: Prof. J. Hoyes Panton	88
Composition of Fodders: G. E. Day	94

PAGE.

LIVE STOCK DEPARTMENT 96
Raising Hogs for Market: W. S. FRASER 96
The Pig Controversy: D. F. WILSON 97
Methods of Breeding Sheep: JOHN A. CRAIG 99
Experiments in Sheep Feeding: Prof. GEO. HARCOURT 112
Sheep in Manitoba: D. F. WILSON 121
Feeding Lambs in Iowa: JAMES WILSON and C. F. CURTISS 123
Soiling Crops on the Farm: C. M. MACFIE 153
Agricultural Experiment Stations, with special reference to Cattle Feeding: C. A. ZAVITZ 156
Tuberculosis: DAVID MCCRAE 161
Wintering Cattle and Finishing for the British market: GEORGE MURDIE 164
Breeding, Feeding and Handling of Beefing Cattle: A. P. KETCHEN 166
Keeping Cows for Profit: D. N. MCINTYRE 169
Outlook of the Heavy Horse Trade: ALEX. GALBRAITH 170
Breeding Horses for Profit: PROF. J. H. REED 173
Breeding and Management of Heavy Horses: ALEX. GALBRAITH 176
The Hackney Horse: ALEX. GALBRAITH 180

POULTRY DEPARTMENT:
How to make the most money out of Poultry on the Farm: J. E. MEYER 186
Poultry on the Farm: W. J. HAYCRAFT 189
The Egg Industry: T. A. DUFF 191

DAIRY DEPARTMENT:
Breeding and Rearing Dairy Cattle: R. S. STEVENSON 194
Sources of Contamination of Milk and Methods of Prevention: F. C. HARRISON 195
How to obtain a good Dairy Herd: Prof. GEORGE HARCOURT 198
Notes on the Dairy Industry of Ontario: Prof. H. H. DEAN 201
Dairying for Profit: S. M. CLEMENS 203
Breeding Dairy Cattle: A. C. HALLMAN 205
Boxing and Marketing Cheese: I. W. STEINHOFF 206

HORTICULTURAL DEPARTMENT:
Apple Culture: A. W. PEART 209
How to Grow Strawberries for Home Use: JAMES SHEPPARD 211
The Farmer's Fruit Garden: H. L. HUTT 211
Cultivation of the Orchard: W. W. HILBORN 214
Small Fruit Growing: C. L. STEPHENS 216
The Possibilities of Fruit Culture: WM. H. BUNTING 218

GOOD ROADS DEPARTMENT:
Roads and the Pathmaster: A. W. CAMPBELL 220
The Improvement of our Country Roads: G. B. ARMSTRONG 222
The Statute Labor System: JOHN MCARTON 223
The Importance of Good Roads and How to Attain and Maintain: W. M. ROBSON 225

DOMESTIC ECONOMY DEPARTMENT:
The Economical Cookery of Meats: MISS BESSIE LIVINGSTONE 228
Domestic Science in the Public Schools: MISS BESSIE LIVINGSTONE 230
The Farm Kitchen: MARY E. MILLAR 231
Farmhouse Fare: A. E. WHITAKER 234
Address: MISS MILLAR 236

MISCELLANEOUS DEPARTMENT:
The Outlook for the Ontario Farmer: THOMAS MASON 239
Constituents of Soils: W. A. STEPHENS 241
Saving and Applying Manure: JAMES B. MUIR 242
Profit in Carp: D. N. KERN 244
Stepping Stones to the Ideal Home: MRS. R. ROGERS 247

SECOND ANNUAL REPORT

OF THE

SUPERINTENDENT OF FARMERS' INSTITUTES

OF

ONTARIO

FOR THE YEAR OF 1895-6.

To the Honorable the Minister of Agriculture:

I have the honor to submit herewith my second Annual Report as Superintendent of Farmers' Institutes.

Your obedient servant,

F. W. HODSON.

SECOND REPORT

OF THE

SUPERINTENDENT OF FARMERS' INSTITUTES

The Farmers' Institute system in the Province of Ontario is now eleven years old. The first meetings were held in 1885 ; since then the annual growth has been remarkable. In 1885, 12 meetings were held ; in 1886, 26 ; in 1887, 40 ; in 1888, 60 ; in 1889, 60 ; in 1890, 75 ; in 1891, 95 ; in 1892, 112 ; in 1893, 119 ; in 1894, 133 ; in 1895, 303 ; in 1896, 666 meetings were held and many requests for assistance were received which could not be granted.

In 1895 there was an attendance of 71,033 at the various sessions of the 303 meetings held under the auspices of the local institutes. In the year ending June, 1896, the attendance was 102,461. The number of papers read and addresses delivered in 1896 was 2,637. These figures show the importance and magnitude of institute work in Ontario.

For some years I have paid more or less attention to institute methods as developed and practised in the various states of the American union. Soon after taking office, in 1894, I issued the following circular, addressing a copy to state and institute officers in each of the states and provinces where institute work is conducted.

GUELPH, Ont.

DEAR SIR,—Will you kindly answer the following questions :

1. How much money is annually spent in institute work in your state ? (Give state grant, county grant, etc.)

2. Do you receive money for publishing advertisements ? If so, what are the annual receipts, and how is it appropriated ?

3. Have you a Superintendent or Director of Institutes ? If so, what salary does he receive annually ?

4. Is he supplied with a free office, light, heat, etc. ?

5. Is he allowed office assistants ? If so, how many, and what is the annual salary of each ?

6. How many institute meetings were held in your state last year ?

7. What was the average attendance at each institute ?

8. What is the average duration of each institute meeting ?

9. What is the population of your state ?

10. What do you pay your institute lecturers per day ?

11. What are their average expenses per day, not including railway fares ?

If you find it inconvenient to answer my questions, will you kindly employ a trusty, well-informed person to do so and forward the bill to me.

An early reply respectfully requested.

Yours truly,

F. W. HODSON.

The following table was carefully compiled from the replies received :

TABLE GIVING SUMMARY OF REPLIES AS TO COST AND MANAGEMENT OF FARMERS' INSTITUTES.

State or Province.	Annually spent.	Amount received for advertising in the annual report.	Superintendent's salary.	Assistant Superintendent's salary.	Office, heat, light, etc., free.	Lecturer's daily wages.	Lecturer's daily expenses, except R.R. fare.	Number of meeting annually held.	Average length of meeting.	Average attendance at each meeting.	Total attendance.	Average cost of each meeting.	Population of State.	Remarks.
	$	$	$	$		$ c.	$ c.					$		
California	750-1,000	....	.....	.....	yes ..	7 50	2 00	15	2 days....	200	3,000	50 to 65	1,500,000	Work under the control of the Agricultural College staff.
												$ c.		
Indiana ...	5,000	.....	.....	.....	yes ..	3 60	3 00	92	2 days....	250	23,000	54 35	2,350,000	Work controlled by Perdue University.
Georgia	500	.....	.....	.....	yes ..	.....	.....	25	1 day	185	4,625	20 00	2,000,000	Work under control of Agricultural College staff. No allowance made for Professors' time or office work.
Iowa.....	5,000	.....	.....	.....	ye ..	.....	.....	.....	.....	.....	.....	.....	2,000,000	Iowa system does not appear uniform nor satisfactory to the people.
Michigan	5,000	.....	600	.....	yes ..	.....	.....	68	2 days....	.....	.....	73 53	2,093,889	Organized work is just being commenced.
Maine.....	3,600	.....	1,500	1,000	yes ..	2 00	1 00	46	1 day	135	6,210	65 22	661,088	.....
Minnesota....	10,000	2,500	1,500	1,000	yes ..	.....	.....	.....	2 days....	.....	.....	.....	1,301,826	.....
New York ...	15,000	.....	2,000	600	yes ..	5 00 to 10 00	2 50	206	2 days....	400	82,400	72 82	6,513,343	.....
Ohio	10,425	.....	.....	.....	yes ..	4 00 to 5 00	*3 00	151	2 days....	420	63,466	69 04	3,672,316	Conducted by the State Board of Agriculture, who pay salary of Superintendent.
Pennsylvania.	7,500	.....	3,000	800	yes ..	.....	.....	149	1½ days...	.....	.....	52 34	5,258,014	.....
Rhode Island.	1,500	.....	.....	.....	yes ..	10 00 to 30 00	.....	20	½ day	50	1,000	75 00	350,000	Work conducted by the Secretary of the State Board of Agriculture.
Virginia	600	....	.....	.....	yes ..	2 00 to 20 00	.....	6	1 to 2 days	100	600	100 00	1,655,980	Work conducted by the State Board of Agriculture.
Wisconsin....	12,000	1,600	2,200	720	yes ..	5 00	1 50	103	2 days....	494	50,882	132 04	1,686,880	.....
Ontario, 1894-5	7,700	.....	1,000	260	yes ..	2 50	*2 60	303	1 to 2 days	234	71,033	25 41	2,114,321	.....
Ontario, 1895-6	.....	.....	.....	.....	yes ..	2 50	*2 60	666	1 to 2 days	154	102,461	Less than $15 00	.....	.....

*Including railway fare.

A careful study of the table makes plain the advanced position occupied by Ontario in institute work. We are doing a greater work than any state or province in America. Individual meetings cost much less here than elsewhere, and the total attendance is greater. When we consider our population in relation to the population of other states, the figures given above seem most remarkable. The reason we are accomplishing more for less money is on account of the institute work here being better organized than elsewhere. Our institute system has always been good. In October, 1894, I addressed a letter to the head of each agricultural department in the United States and in our sister provinces, to the head of each institute system in America, and to many prominent and successful institute workers. A copy of a similar circular letter was sent to each executive officer, as far as known, of each farmers' institute. In each of these circulars I asked for copies of rules and regulations, and particulars of such methods as the department, or person addressed, had found useful in conducting farmers' institutes or kindred associations. In reply I received much data of great importance. From this was compiled a set of rules to govern farmers' institutes in Ontario, and the institutes held in 1895 were, as far as practicable, conducted on the lines recommended. At the close of the season these rules were submitted in typewritten form to many of the leading institute workers in Ontario, and advice sought from leading men in the United States. A few changes were suggested and made, and the rules and regulations governing farmers' institutes in this Province were passed by Order in Council, August, 1895. The institutes conducted in the year ending June 30th, 1896, were governed by this Act. Though great care had been exercised in drafting this Act and rules, it was decided, that after they had been thoroughly tried, for practically two seasons, viz., 1895 and 1896, to consult further the officers and directors of each institute in Ontario. To this end a copy of the following letter was sent to each officer and director:

GUELPH, ONT.

DEAR SIR,—If it is possible, I, or my representative, will meet with the officers of each local Institute, between now and the first of June, to discuss with them the rules governing Farmers' Institutes. Please select a point and building convenient to yourself and directors, and, if possible, situated on a line of railroad, so that I may meet the officers of your Institute and pass on to the next Institute with as little loss of time as possible. I have written each officer and director of your Institute apprising them of my intentions and asking their co-operation.

If, after meeting with you and your officers, and the officers of other Institutes, it is deemed advisable to change any clause or clauses of the present Rules, it will be done. It is the wish of the Department of Agriculture to make these Rules, in every respect, as acceptable as possible. While it is necessary that a uniform system prevail throughout the Province, it is not intended that the Rules and Regulations shall be burdensome to any Institute, nor will they increase the work of the local secretaries. The spirit rather than the letter of the Rules shall be observed.

By this mail I send you and each officer and director of your Institute, a copy of said Act and Rules. Will you look them over and mark such clauses as you think should be changed? I particularly call your attention to Schedule B. Would a change in the grouping of the townships be a benefit to your Institute?

At what date have you previously held your annual meeting?

To keep this matter prominently before officers and directors, the following letter was issued a little later:

GUELPH, ONT.

DEAR SIR,—I enclose you a copy of a letter (see letter given above), a copy of which was previously sent you. Will you kindly give your Secretary and me your hearty co-operation in this matter. We have now had two seasons' experience with the new Rules, etc.; and while I believe them to be by far the best in America, yet I am anxious to meet the Institute officers, and by their aid make further and final improvements.

Fifteen hundred of each of these were mailed. In Toronto, on March 27th, the Superintendent, by previous appointment, met a number of leading Institute officers from various parts of the Province, and discussed with them the Rules and Regulations. Five hours were spent in discussion, at the end of which the then existing Regulations, with a few minor changes, were unanimously endorsed. Among those present were Messrs. John I. Hobson, Mosboro'; David McCrae, Guelph; James McEwing, Drayton; W.

S. Fraser, Bradford; T. G. Raynor, Rosehall; A. W. Peart, B. A., Burlington; and Prof. Geo. Harcourt, St. Anns. After this the boards of directors of the various Institutes of the Province were consulted. The result was that 90 per cent. of the Institutes favored a change in the first clause of Rules and Regulations governing Farmers' Institutes, whereby county councils or municipal councils should be asked to pay a grant of twenty-five dollars to the officers of the District Institute, on condition that the said Institute has conformed with the Rules and Regulations governing Farmers' Institutes; and that the legislative grant shall not, hereafter, be dependent on the municipal grant. I realize that it may take some time to bring this change about, and that it involves a somewhat serious question. Sixty-six per cent. favored the election of the President and Vice-President by the directors. Eighty-six per cent. favored the election of the Secretary by the directors. Eighty per cent. favored the suggestion *re* payment of Secretary, etc., found printed immediately after Rules and Regulations. Over 80 per cent., by a unanimous vote, declared in favor of the first Tuesday in June at the time of holding the annual meeting.

After the reports of these meetings were received, the Rules and Regulations were carefully revised. In the revision, due respect was paid to the recommendations received from each of the various Institutes. The finally revised Rules and Regulations, and suggestions, are as follows:

ACT, RULES AND REGULATIONS PUBLISHED BY THE ONTARIO DEPARTMENT OF AGRICULTURE, 1896.

In the construction of the Farmers' Institutes Act and of the Rules—

(1) "The Department" shall mean the Department of Agriculture of the Province of Ontario.

(2) "The Minister" shall mean the Minister of Agriculture of the Province of Ontario.

(3) "The Superintendent" shall mean the Superintendent of Farmers' Institutes for the Province of Ontario.

(4) "District" shall mean a district composed of municipalities as set forth in Schedule "A" of the Act, Rules and Regulations.

(5) "Regular meetings" are those at which delegates sent by the Superintendent are present, and whose expenses, etc., are paid by the Department.

(6) "Supplementary meetings" are those conducted by the local officers.

(7) "Regular delegates" are those sent annually to assist local officers to hold regular meetings. (See clause 5).

(8) "Supplementary speakers" are those sent at the request of local officers to assist said officers when holding supplementary meetings.

FARMERS' INSTITUTES ACT.

1. The formation of Farmers' Institutes, for the purpose of disseminating information in regard to agriculture, shall be permitted under this Act, one for each district as given in Schedule "A" to this Act, but the Lieutenant-Governor in Council may, upon the recommendation of the Minister, authorize the organization of additional Farmers' Institutes, or make changes in the limits of the various districts, so far as Farmers' Institutes are concerned, in order to increase their efficiency.

2. The Lieutenant-Governor in Council may, upon recommendation of the Minister, adopt rules or regulations for the general guidance or direction of such Farmers' Institutes.

3. Every Farmers' Institute shall be entitled to receive such money out of the unappropriated funds in the hands of the Provincial Treasurer as the Legislature may grant, provided—

(*a*) That the number of members is at least fifty, each paying an annual fee of not less than twenty-five cents.

(*b*) That the rules or regulations approved by the Lieutenant-Governor in Council have been carefully observed.

(*c*) That all reports or returns required to be made to the Superintendent have been made to the satisfaction of the Minister.

RULES AND REGULATIONS.

(*Approved by the Lieutenant-Governor in Council.*)

1. The Ontario Legislature has voted an appropriation for Farmers' Institutes for a grant of $25 to one institute in each district, on condition that an equal sum be granted by the county council or the municipalities in which the institute is organized, and on such further conditions as may be imposed by regulations of the Minister of Agriculture.

2. The object of each local institute shall be the dissemination of agricultural knowledge in its district and the development of local talent. The officers shall endeavor to bring the rank and file of the farmers into touch with the most successful local men, that the masses may become more conversant with the best and most profitable methods of farming, stock raising, dairying, fruit culture, and all branches of business connected with the industry of agriculture.

Organization of Institutes.

3. One Institute may be organized in each district of the Province, exclusive of cities, or in such other divisions as the Lieutenant-Governor in Council may authorize.

4. The organization meeting may be called by the Superintendent of Farmers' Institutes, by the head of a municipality, or by any five farmers of the district; and at least two weeks' previous notice shall be given by advertisement in two newspapers published in the district, or by placard, in which shall be stated the object, time, and place of meeting.

5. As soon as organization is completed, the Superintendent shall be notified, and the names and addresses of the officers and directors shall be forwarded to him.

6. All memberships shall terminate the 31st of December of each year. (See 48, A. & R.)

7. Each institute shall be known by a distinctive name.

Officers.

8. The officers shall consist of a president, a vice-president and a secretary-treasurer, and one or more directors from each municipality included in the institute districts, except in new or thinly settled districts when directors may be elected irrespective of the municipalities. Said officers shall be elected annually, and together shall constitute a board of directors, the majority of whom shall be practical farmers.

9. There shall be an executive committee composed of the president, the vice president and the secretary-treasurer.

10. There shall be elected annually two auditors, to audit the accounts of the institute.

11. If the secretary resigns, or for any cause does not perform the duties of his office, or if he remove from the district, the president shall immediately issue a letter calling the officers and directors together, giving each at least ten days' notice. In the meantime the president shall perform the secretary's duties. At the time and place appointed, the officers and directors present shall appoint a secretary. In case the presidency is vacant, or the president does not take action within ten days, the vice-president shall assume the power of president. Other vacancies shall be filled in like manner.

12. Any change in the personnel of the executive or directorate, shall be reported to the Superintendent forthwith.

Annual Meeting.

13. The institute year shall begin July 1st and end June 30th. The annual meeting shall be held on the first Tuesday in June, at one o'clock p.m. of each and every year, At this meeting the aforenamed directors and auditors shall be elected for the ensuing year.

14. The method of election shall be by ballot or otherwise, as decided by the members present. No person shall be eligible for office, or be entitled to vote at the annual or any other meeting, who has not paid his fees in full for the current membership year.

15. At the annual meeting, members may suggest points in the district where institute meetings may be held during the succeeding institute year, first as to regular, and secondly as to supplementary meetings.

16. At the annual meeting, the executive officers for the current institute year, shall, through the secretary, present to the meeting in writing a carefully prepared report of the proceedings of the year, in which shall be stated the number of institute meetings held since last annual report, the attendance at each session, the total number of papers read and addresses delivered.

The treasurer shall present his report for the current year. Said report shall first be audited and certified to by the auditors.

17. The annual meeting shall be devoted to the business of the institute, as specified in clauses 13, 14, 15 and 16, and in carrying out the "Programme of the Annual Meeting," and in considering ways and means whereby the institute can be improved.

18. The annual meeting shall be advertised by mailing to each member, at least ten days before the first Tuesday in June, an announcement calling the members together. Said announcement shall specify the date, place, and hour of meeting, and shall contain a programme of the said meeting. If the executive deem it in the interest of the institute, posters and newspaper advertising may also be employed to make his meeting public.

PROGRAMME FOR ANNUAL MEETING HELD FIRST TUESDAY OF JUNE OF EACH YEAR.

19. (1) President's report.

(2) Discussion thereon.

(3) Report of the executive presented in writing by the secretary.

(4) Treasurer's report presented in writing.

(5) Auditors' report presented in writing.

(6) Suggestion of points at which to hold regular meetings.

(7) Suggestion of points at which to hold supplementary meetings.

(8) Election of directors, election of auditors.

(9) Suggestions as to how the institute can be improved or made more useful, if this has not already been considered by the president in his opening address and the discussion following.

10) Addresses, etc.

20. At the close of the annual meeting, the new board of directors shall meet and elect from among themselves a president and a vice-president, and shall finally decide at what points in the district regular and supplementary meetings shall be held during the succeeding institute year. The points selected shall be entered on page C of the secretary's minute book, and a copy of this page shall be sent to the Superintendent and shall be considered as part of the report of the annual meeting.

21. The officers and directors shall, at the close of the annual meeting, and when afterwards necessary, appoint from among themselves or otherwise a secretary-treasurer, who shall remain in office during pleasure.

22. In case any institute shall, through any cause, fail to hold its annual meeting at the time appointed the Superintendent may appoint a time for holding the same, the meeting to be called as for the regular annual meeting, and this meeting shall, in all particulars, be taken as the annual meeting of the institute.

OTHER GENERAL MEETINGS.

23. Each institute shall hold at least five meetings each year in the district. At these meetings, except in the case of the annual meeting, papers shall be read or addresses delivered on topics relating to agriculture, horticulture, dairying, or kindred subjects. Free discussion should be encouraged. (See explanation page 8, clause 23.)

24. All institutes organized under the Act shall be strictly non-partizan and non-sectarian in every phase of their work, and no institute shall be operated in the direct interest of any party, sect, or society, but for the equal good of all citizens and the farming community.

25. No subject shall be presented at an institute meeting or discussion allowed, of a political or sectarian nature; nor shall any speaker be allowed in his lecture, essay, or speech, or in any discussion, to advertise wares or schemes in which he has a direct or indirect pecuniary interest. The delegates and officers of the institute shall see that the exercises are not subordinated to any low or frivolous entertainments or to the aggrandizement of any individual, party, or sect.

26. The regular delegation shall visit two points only in one year in each institute district, or when said delegation spends two days at one place, that point only shall be visited. The Government will defray the cost of sending these delegates, but officers and members of institutes are expected to lighten as far as possible the expenses of delegates while in their District.

27. Should any institute require a speaker or speakers at any other period during the year, to assist in holding supplementary meetings, application for assistance shall be made to the Superintendent at the time of reporting the annual meeting. The Department will pay for the services of such supplementary speaker or speakers, but the institute requiring the services of same shall pay all legitimate expenses from the time said person or persons leave home until they return thereto. When a delegate or delegates address meetings in more than one district, the expenses will be equitably divided between said institutes and collected from the institute or deducted from their grant.

28. If an institute decides to hold supplementary meetings other than those asked for at the time of reporting the annual meeting, said institute shall pay all expenses and wages. If a regular or supplementary meeting has been granted, and the time and place published in the annual bulletin, no change shall be made in said time or place. Any institute failing to hold a supplementary meeting published as aforesaid, shall be required to pay the expenses notwithstanding.

29. All requests for assistance to hold agricultural, horticultural, live stock, or dairy meetings, shall, when possible, be made through the secretary of the district institute. Applicants should state what subjects they wish the speaker to discuss.

30. Every meeting of an institute, except the annual meeting, should be advertised by issuing posters not less in size than 15x20 inches, on which should be printed an attractive programme of the meeting

giving date and place of meeting, hour of opening, the name and address of the speakers, topics to be discussed by each, also the hour at which each speaker will address the meeting, the time to be occupied by each address, also the time allowed for discussion after each address, and such other information as the executive deems necessary. A copy of said bill should be sent at least two weeks previous to the date of meeting, to each postmaster, each schoolmaster, each miller, each blacksmith, and to other places of public resort in the district, which are within a radius of ten miles of the place of meeting, with a request to post in a conspicuous place. It shall be the duty of the officers and directors to exercise diligence to ensure the proper posting of said bills. In addition thereto, a programme of convenient size, containing similar information, should be distributed so as to reach its destination at least ten days previous to date of meeting. A copy of said programme should be sent to each member of the institute, to farmers, journalists, public men and others in the district who reside within ten miles of the place of meeting. Such posters and programmes should announce that all interested are welcome, whether members of the institute or not. Copies of said programmes should be sent to the school teachers in the district, with the request that they be carefully distributed among the children.

31. A copy of each poster and each programme shall be sent as soon as published to the Superintendent and to each speaker advertised.

32. When institutes are notified of the dates assigned for their meetings, and are furnished with the names of the speakers and a list of topics, the executive committee shall proceed to complete arrangements according to these rules. They should finally engage the hall, select the local talent, etc., etc. At least half of the time of the institute should be occupied by local talent. The hall or other building to be used for holding the institute meetings should be lighted and heated, when such is necessary, at least half an hour before the time advertised. When light and heat are not required, said places should be opened and prepared for holding the meeting, at least one-half hour before the time advertised.

33. The time allowed speakers should be from five to thirty minutes, to vary according to the subject and the ability of the speaker. It is no breach of courtesy to limit each speaker to the time allotted him in the programme. When the programme has been carefully prepared on that basis, no speaker should be allowed to exceed the time, to the embarrassment or detriment of the speakers who are to follow him. Hold speakers down to their time, and the work of the institute, as a a rule, will be benefitted. Sessions should not be too long.

34. No one should be named on a programme who has not agreed to do the specific thing he is advertised to do.

35. At each meeting of the institute, a committee should be appointed to canvass the audience for members.

Board of Directors.

36. The board of directors, under these rules and regulations, shall have full control of the affairs of the institute. They shall arrange time and places of meetings when not otherwise arranged for and shall outline the work and policy of the institute.

Executive Committee.

37. The executive shall carry into effect the plan of work decided upon by the board of directors, and shall arrange the details of the same. (See Clauses 9 and 25, A. & R.)

Notice of Meetings.

38. A meeting of the directors or of the executive may be held at any time, provided one week's notice by letter be given to each director, if a directors' meeting is to be held; a similar notice shall be given to each executive officer in case of an executive meeting Meetings of the executive officers or of the directors, may be held on shorter notice, provided each director or executive officer be otherwise notified and agrees thereto. (See 18, A. & R.)

DUTIES OF OFFICERS.

President.

39. It shall be the duty of the president to preside at all meetings of the board of directors and of the executive committee. In the absence of the president, the vice-president shall preside; and if both are absent, a chairman shall be appointed by the committee.

Secretary.

40. The secretary shall have the powers of a managing director, acting under the control and with the approval of the executive

41. It shall be the duty of the secretary to call meetings of the executive committee and board of directors, upon the authority of the president or any two officers or directors, to give notice of all meetings as required by these rules, and to keep correct minutes of proceedings.

42. All official correspondence relating to the institute shall be conducted by the secretary or in the name of the secretary.

43. In all correspondence relating to the institute, the name of the institute shall be given in full after the signature of the officer, except in cases where an official heading is used, giving the name of the institute.

44. All reports and returns required by the Superintendent, shall be made upon forms specially provided and in the manner indicated.

45. He shall keep a book in which shall be entered the names and addresses of members in alphabetical order, also a book to be used as a mailing list, which shall contain the names of parties to whom posters, programmes, etc., may be sent.

46. It shall be the duty of the secretary to prepare and submit to the executive the annual report as set forth in clause 16, and to present the final report to the annual meeting.

47. Not later than the twentieth day of June of each and every year, he shall forward to the Superintendent by registered mail, or otherwise, a copy of said report, together with a copy of the treasurer's report, the name and address of each officer and director elected for the ensuing institute year.

48. On or before the 10th day of January of each year the secretary shall send a revised list of members for the current membership year to the Superintendent, and on or before the 10th day of each succeeding month he shall forward the name and address of each additional person who has since the previous return become a member of the institute. (See 6. A. & R.)

49. Within one week after the close of each institute meeting or series of meetings, the secretary shall forward to the Superintendent a detailed report of said meeting or meetings, in which shall be stated the name of the place or places where sessions were held, the number of persons present at each session, the name and address of each person who read a paper or gave an address, the title of the address or paper, and a comment upon its value, whether good, fair, or indifferent. (Use form "A" of secretary's minute book for making returns required by this clause.)

50. The secretary shall, when possible, retain the manuscript of all papers read at meetings of the institute by local talent, in order that he may, when required, furnish the Superintendent with the same. Each institute is required to forward at least two such papers each year, which may be published as the superintendent decides. Secretaries or essayists are not required to rewrite papers before sending them to the Superintendent; forward them as read at local meeting.

51. All reports, names, post-office addresses, etc., shall be written in a plain, legible hand, or may be typewritten.

Treasurer.

52. It shall be the duty of the treasurer to receive and account for all moneys belonging to the institute, and disburse the same under the instructions of the executive, without whose order no money shall be paid out. He shall also prepare in detail and present to the annual meeting a duly audited statement of receipts and expenditure.

53. He shall use such cash and receipt books, membership tickets, etc., as may be required by the Superintendent.

Directors.

54. Each municipality in the district shall be divided annually between the directors representing the same, whose duty it shall be to make a thorough canvass for members each year. This division of territory shall be arranged at a directors' meeting held immediately after the close of the annual meeting.

55. As soon as it is decided to hold an institute meeting in a municipality, the directors elected to represent that municipality shall form part of the executive committee, until after the close of said meetings. The duties of the said directors shall be to assist (to the best of their ability), the other members of the executive, to the end that a successful meeting may be held in their municipality.

56. It shall be the duty of the officers and directors to be present at the meetings of the institute. An officer or director who has not during the current year attended the meeting held in his municipality (except when prevented by sickness), or otherwise rendered valuable assistance to the institute, shall not be eligible for re-election to office for the ensuing year.

General Rules.

57. Every officer and director should promptly answer all official communications addressed to him by the Superintendent, and should make diligent efforts to furnish any information required of him relative to the affairs of the institute.

58. All money received, whether as members' fees, legislative grant, grant from the county councils or from municipalities, or otherwise, shall be spent within the district in which the institute operates: (1) To defray actual expenses of meetings such as are heretofore described; (2) To employ suitable persons

to address said meetings; (3) To assist in circulating agricultural, horticultural, live stock, and dairy literature or periodicals among the members, or to establish a circulating agricultural library for the use of members; (4) To remunerate the secretary and others for services rendered.

59. The funds of the institute as received by the treasurer shall, when possible, be deposited in a chartered bank to the credit of the institute.

QUORUM.

60. At all meeting of an institute or of the officers, if duly advertised as set forth in these rules, ten members shall form a quorum to do business at an annual or other general meeting. At a directors' meeting, five shall be a quorum. At an executive meeting, two shall be a quorum. If at any meeting a quorum is not present, those present shall adjourn, and the meeting shall again be called as prescribed by these rules. (See 18 and 38, A. & R.)

61. The officers and directors shall act as far as practicable upon the recommendations of the Superintendent, and shall submit, to him through the secretary all questions relating to the welfare of the institute upon which advice may be required.

62. Each member of an institute shall be entitled to receive a copy of such publications as the following, issued by the Department of Agriculture for the Province of Ontario:

Report of the Ontario Agricultural College and Experimental Farm.

Report of the Ontario Agricultural and Experimental Union.

Report of the Dairymen's Association of Eastern Ontario.

Report of the Dairymen's Association of Western Ontario.

Report of the Ontario Creameries' Association.

Report of Farmers' Institutes.

Reports of the Dominion Cattle, Sheep and Swine Breeders' Associations.

Report of the Poultry Associations.

Bulletins of the Agricultural College and Experimental Farm.

Any change of address or any failure to receive the bulletins and reports issued by the Agricultural Department should immediately be reported to the Superintendent.

The names of all officers and directors shall be included in the list of members.

63. The blank books used shall be those authorized by the Department. Blank forms for reports of meetings, financial statements, list of members, membership books, mailing books, cash book, etc., may be had from the Superintendent.

64. All institute returns shall be made to the Superintendent.

ORDER OF MEETINGS.

65—(a) Except by permission of the presiding officer, no member or other person shall speak other than to ask a question or to introduce or speak to a motion.

(b) In the discussion following the introduction of a subject, no person shall speak more than twice, nor for a longer time than five minutes, except by a vote of the meeting.

(c) When a question is under consideration, no motion shall be in order, except the following: (1) To adjourn; (2) To postpone; (3) To amend. These motions taking precedence in the order named, and the first two shall be decided without debate.

(d) Before the vote is taken on any motion or amendment, the president shall ask, "Is the meeting ready for the question?" The question shall not be put so long as any member desires to speak and is in order. Any member desirous of asking a question on the subject introduced may do so verbally, but if he desires to ask more than two questions, he must submit them to the secretary in writing.

66. Every member is entitled to the following privileges:

(a) To protest against any decision of the institute, and request his objection to be recorded in the minutes.

(b) To protest against the decision of the chair and appeal to the meeting, stating the grounds of appeal, which shall then be put without debate in these words: "Shall the decision of the chair be sustained?"

67. A motion to re-consider any question decided by this institute shall be in order, providing such motion be not made on the same day on which the resolution is carried.

68. Order of business for general meetings other than the annual:

(1) Calling the meeting to order by the president.

(2) Reading and disposing of communications.

(3) Reports of committees.

(4) Programme of the day and discussion.

(5) Question drawer.

(6) Adjournment.

Explanations.

In framing the Act and Rules, special care has been taken to lessen rather than increase the work of the local secretaries.

See Clause 23, A. & R. The five meetings referred to in Clause 23 may include, as well as the Annual, Regular and supplementary meetings of the institute, meetings of the travelling dairy, if held in the district under the auspices of the institute. Picnics, if addresses on agricultural subjects are given, or if the point visited is one of agricultural interest, such as an experimental station, a noted farm, etc., official meetings called to meet the Superintendent. A meeting continuing two days may be counted as two meetings. Each of aforesaid meetings should be reported as set forth in Clause 49 of A. & R.

Legislative Grants.

The reports of the annual meetings must be sent to the Superintendent, not later than June 20th. As soon as these have been completed in satisfactory form, the Superintendent will notify the Minister of Agriculture, and the legislative grants will be paid as soon as convenient. If all reports are made out and forwarded in accordance with these instructions, the officers will receive the grants about July 1st, or within a few days thereafter.

Circular Letters.

The Superintendent's communication to institute officers is principally by circular letter. These circular letters always contain recommendations of a provincial nature. All the plans proposed may not suit every institute, but institute officers are expected to carry out suggestions which are best suited to their district. The Superintendent is a director on each local board. As he cannot meet with each institute, he uses circular letters to do his part of the work. Very frequently questions asked by institute officers are answered in these circulars. When sending out a circular to the secretaries, the contents of which should be known to the directors, he always sends a copy to each director. He does this to lessen the secretary's work and to help him and his directors. This plan has worked very well.

Because he has done this some of the secretaries have thought he had not confidence in them. This is not the case. His long experience as secretary of associations has taught him that much more work can be done, and done much more cheaply, by correspondence than in any other way. When it is necessary for the directors to be called together to consider an important question, they should be supplied with the facts at least a week before they meet. When they come together thus advised, they can discuss matters intelligently. If the Superintendent did not send copies of all circulars dealing with institute work to each director, the local secretary would have to do so. If the Superintendent does this it saves the secretary the trouble.

Memberships.

The Department will hereafter cancel all membership lists on December 31st, each year. Secretaries should revise the membership books the first week in January and send to the Superintendent new lists at as early a date in that month as possible. Many members will doubtless join during September, October and November. It is advisable that such be considered members for the succeeding year. This is the plan adopted by many newspapers, especially agricultural papers. That is, if a man subscribes for a paper in September, October or November, of 1895, and pays the subscription price, his paper is continued until the 31st of December, 1896. The adoption of this plan will, I am sure, prove a benefit to the institute system. Members who join after January 1st and before September 1st of each year, will as far as possible, be sent copies of all publications issued during the current year, and specified in clause 62 of Act and Rules. The membership reported at the annual meeting should be that which terminated the previous December. For instance, in stating the number of members, we will say Addington had one hundred members the 31st of December, 1895. In June, 1896, in making the returns the secretary would state that the membership for the year ending December 31st, 1895, was 100.

Suggestions.

There is no general system regarding the payment of secretaries and other officers. Some institutes are paying an ample sum for services rendered; others are paying too little. This is a matter that must be left entirely in the control of the local officers; yet it is desirable that, if possible, a uniform system be adopted throughout the Province. The following plan is respectfully suggested:

If the institute has a membership of fifty, that the secretary receive $10 annually and all legitimate expenses while attending meetings, whether of the institute, the directors, or the executive officers. In addition to this, he may receive $5 for each additional fifty persons who join the institute. By this plan, an institute with a membership of 200 will pay its secretary $25 net for his services. As a rule, the success or failure of an institute depends on the secretary. If an institute has a good secretary, it will flourish; if the secretary is not up to the mark, the institute will sooner or later go to the wall; therefore, the best available man should be chosen for this position and he should be liberally dealt with.

Many of the presidents and directors are now doing a good deal of work for which they receive no remuneration; and they often have to pay their own expenses. It is not necessary for the directors to meet frequently; probably once or twice a year is often enough, viz., just before and just after the annual meeting; but the executive officers (see Clauses 9 and 55, A. & R.) should meet much more frequently; and if the funds of the institute will allow of it; they should be paid their actual expenses when attending meetings or when engaged in institute work.

In order to increase the membership and interest, each district should be canvassed annually, as provided for in Clause 54, A. & R. In order to meet the expenses of each director so engaged, a commission of 25 per cent may be allowed on each subscription taken by him in the section of the township he represents. In a thickly settled district an industrious man should take at least twenty names a day. His commission would be $1.25.

Officers whose expenses are paid otherwise than by commission, should be required to exercise strict economy. A statement of all such expenses should be presented in detail at the annual meeting.

If an officer's expenses are paid while attending a meeting, he should not be allowed commission and expenses also.

This system has been laid before the officers of most of the institutes in the Province, 80 per cent. of which have endorsed the principle. Others opposed it, but none has suggested a better method.

The objections to this plan are recognized, but a better method has not been discovered, though diligent enquiry has been made. The percentages, etc., given above are used as examples only. Institutes which adopt the plan of paying secretaries, etc., should fix the percentages, etc., according to local conditions.

Posters and programmes should be printed in the most attractive manner possible. Each institute should adopt and constantly use a certain color of paper, ink, and a certain typographical arrangement, which would soon become familiar to the people, and therefore recognized and noticed wherever seen. Red ink on white paper makes a bill noticeable. The bill and the programme should each give, as near as possible, the same information, and the typographical appearance should be the same, the only difference being in the size of the type and the size of the paper used.

The most desirable size for the poster is about 22 inches long by 16 inches wide. The paper used for posters should be not lighter than 50 pounds to the ream, nor more than 60 pounds; the latter is the best weight. When tacked to a wall or pasted on boards, bills of this weight last much better than lighter ones. They are stiffer and hang better from a cord when put up in stores.

Programmes should be printed on paper 50 pounds to the ream and may vary in size from 5x11 inches to 6x12 inches, according to the size of the sheet from which they are cut. Sheets of this size printed on one side only will be found cheaper and just as useful as smaller folders printed on both sides.

Some institutes have found it profitable to put advertising on the back of programmes. Not less than one dollar per inch should be charged for advertising on back of programme when the edition numbers 500, i. e., a programme 10 inches long and 500 in number, should net the institute $10 if sold to advertisers. If the number of programmes be more than 500 or less than 500, the price per inch should be proportionate. Never accept advertising from any but reliable parties, making or selling first-class goods or stock.

Hereafter when sending speakers' names, address, and topics, the Superintendent will indicate the time required to deliver each address, and the length of time that should be devoted to discussion. The last period may be reduced if the officers deem prudent.

The following is an example of how speakers' names, etc., will hereafter be sent out:

C. A. Zavitz, B.S.A., O.A.C., Guelph, Ont.:

"The Best Varieties of Barley, Wheat, Peas and Oats," lecture and discussion one hour; Experiments in Growing Roots and Potatoes," lecture and discussion one hour; "The Value of Clover," lecture 25 minutes, discussion 25 minutes; "Succulent Food for Live Stock," lecture 25 minutes, discussion 25 minutes; "Agricultural Experiments," lecture 30 minutes; "The Ontario Agricultural College," lecture 30 minutes.

Without reference to politics, divide the institute printing fairly between the newspaper publishers in the District.

Many of the officers are at a loss to know what they should pay for printing. In order to assist such parties, I have procured the following quotations from a well known printing house:

100 posters, 21x27	$2.50
Subsequent 100's from same form	50
200 programmes, 11x5½	1.75
Subsequent 100's	30

The above provide for posters being printed on 60 pound paper, and programmes on No. 1, 60 pound book. In every detail the work will be attractive.

Miller, Richards & Co., Toronto, in their published price for job printing, give the following quotations:

	50.	100.	Add. 100.
Eighths	$1.00	$1.25	$0.25
Quarter sheets	1.25	1.75	50
Half sheets	2 00	2 50	65
Whole sheets	3.25	4.00	1.25

Smaller than eighths, reduced price of eighths, 10 to 15 per cent.

When an officer or director is canvassing for members, each should take with him a complete set of the publications sent free to members during the past year. By showing these, or the ones the person canvassed is most likely to be interested in, many more subscriptions can be obtained.

Each person becoming a member should be given an annual membership ticket or badge, the latter preferred. When badges are used each member should be requested to wear same whenever he or she attends institute meetings. This will tend to advertise the institute, and will make more easy and effectual the work of those selected to canvass the meeting.

When possible, the institute should take the form of a farmer's club. Public meetings should be held in each township at least once during each year, more frequently if practicable.

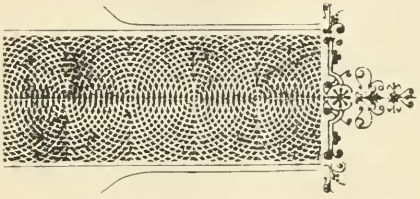
The secretaries of a number of institutes have asked that a copy of a bill be sent them, that will serve as a sample for printers; either page 15 or 16 will answer for this purpose.

A sample Member's Card has also been asked for. That given below is a very good form.

FRONT

FARMERS' INSTITUTE.

189.....



Member's Ticket . . . 25 CENTS.

Mr.....

Sold by.....

G. B. HOOD, Secretary.

BACK

Each Member is entitled to receive a copy of the following publications when issued:

Report of the Ontario Agricultural College.
Report of the Agricultural and Experimental Union.
Report of the Dairymen's Association of Eastern Ontario.
Report of the Dairymen's Association of Western Ontario.
Report of the Ontario Creameries' Association.
Report of Farmers' Institutes.
Report of the Dominion Sheep and Swine Breeders' Associations.
Report of the Poultry Associations, East and West.
Report of the Good Roads Association.
Bulletins of the Agricultural College and Experimental Farm.

Valuable matter is contained in these reports: everyone should have them. Join the Institute, and they will be sent to you free of cost. If you are a member and do not receive each of these publications annually, notify your secretary, or write to **F. W. Hodson, Superintendent of Farmers' Institutes, Guelph, Ontario.**

A fair price for a similar card, printed on a good quality of cardboard, is:

For first 100	$2.00
Each subsequent 100	75

The newspaper advertising should, when possible, give the same information as is given on the poster, but in a more condensed form.

The size of this Poster was 27 inches long, 20½ inch wide.
The size of the Handbill was 11 inches long, 5½ inches wide.

PUSLINCH FARMERS' CLUB

AND

SOUTH WELLINGTON FARMERS' INSTITUTE

THIS INSTITUTE WILL MEET

IN THE CITY HALL, GUELPH

Mon. and Tues., Jan. 20 and 21, '96

When the following Subjects will be introduced by the Gentlemen named:

PROGRAMME.

FIRST DAY, JAN 20th, 1 p.m.

President's Address.

First Paper—"How and when to Spray for Insects and Fungous Diseases."—A. McNEILL, M.A., Windsor, Ont.

Lecture 30 minutes, discussion 20 minutes—John McPhee, Aberfoyle, to lead in discussion.

Second Paper—"Clover Growing and Curing."—W. S. FRASER, Bradford, Ont.

Lecture 15 minutes, discussion 20 minutes—A. Marshall, Puslinch, to lead in discussion.

Third Paper—"Milk and Its Products." R. HARCOURT, B.S.A., O.A.C., Guelph.

Lecture 30 minutes, discussion, 30 minutes. W. W. Kenny to lead in discussion.

Question Drawer.

SECOND DAY, JAN. 21st, 10:30 a.m.

First Paper—"Every Farmer His Own Mason, or, How to use Concrete in Farm Structures."—A. McNEILL.

Lecture 30 minutes, discussion 20 minutes—Wm. Rea, Arkell, to lead in discussion.

Second Paper—"Sheep Raising for Profit."—W. S. FRASER.

Lecture 20 minutes, discussion 20 minutes—Jas. Laidlaw, Jr., to lead in discussion.

Question Drawer.

AFTERNOON SESSION, 1:30 p.m.

First Paper—"How to Improve the Fertility of the Farm."—R. HARCOURT.

Lecture 20 minutes, discussion 20 minutes—G. B. Hood to lead in discussion.

Second Paper—"Corn and the Silo."—W. S. FRASER.

Lecture 20 minutes, discussion 30 min.—A.S.D. Hill and Wm. McCrea to lead in discussion.

Third Paper—"Social Side of Farm Life."—A. McNEILL.

Lecture 30 min., discussion 30 min.—D. McNaughton and Walter Buchanan to lead in discussion.

All are invited to attend and take part. Come out and let us learn something from your experience. Farmers who know most of their profession are usually the most anxious to learn more.

JOHN ILES,
Vice-President.

G. B. HOOD,
Secretary.

[Please Post in a Conspicuous Place.]

N. B.—This Bill was printed in Red on White Paper.

The size of the Poster was 23 inches long, 17 inches wide.
The size of the Handbill was 11 inches long, 5½ inches wide.

THE ANNUAL MEETING

... OF THE ...

DOMINION

Cattle Breeders' Association.

The Fifth Annual Meeting of the Dominion Cattle Breeders' Association

Will Convene in **Shaftesbury Hall,**

(Queen St. West, near Yonge)

TORONTO, APRIL 17th, 1896.

AT ONE O'CLOCK P.M.

PROGRAMME

1 p.m.—President's Address. Hon. Thos. Ballantyne, Stratford.
1.30—Secretary's Annual Report. F. W. Hodson, Guelph.
1.45—Transportation of Live Stock, by A. Johnson, Greenwood, Ont.
2.15—Discussion on Transportation, opened by Robt. Miller, Brougham, Ont.
2.45—The Present Quarantine Regulations, by John I. Hobson, Mosboro', Ont.
3.15—Discussion on Quarantine Regulations, opened by J. C. Snell, Sncigrove, Ont.
3.45—How the Quarantine Regulations and Railroad ates affect the Sheep and Swine Interests. D. G. Hanmer, Mt. Vernon, Ont.

4.30—An Address by the Hon. G. A. Kirkpatrick, Lieutenant-Governor of Ontario.

ELECTION OF OFFICERS.

7.30—A Meeting of the Directors will be held in the Palmer House, Toronto, Ont.

Hon. John Dryden, Toronto; Dr. Jas. Mills, O. A. C., Guelph; Mr. G. E. Day, B. S. A., O. A. C., Guelph; Mr. Wm. Smith, M. P., Columbus; Mr. Wm. Rennie, O. A. C., Guelph; Mr. William Mulock, M. P., Toronto; Mr. Jno. A. McGillivray, M. P., Uxbridge; Mr. David McCrae, Guelph; Mr. John Miller, Brougham; Mr. T. C. Pattison, Toronto; Mr. W. C. Edwards, M. P., Rockland; and other prominent agriculturists have been invited to attend and take part in the discussion.

The questions to be debated are of national importance.

RAILWAY FREIGHT RATES.

Disastrous effects must result to the cattle industry of this country from the recent changes made in the classification of cattle singly or in small lots. In the present depressed condition of agriculture the farmers who require the use of pure-bred bulls cannot afford the additional tax which these changes entail on them. The result will be the use of locally-bred and inferior sires, which must ultimately result in deterioration in the quality of the cattle produced for exportation, and thereby greatly endangering the reputation of our cattle in the great markets of the world. Such a condition will surely reduce the number of animals bred and exported.

QUARANTINE.

The Quarantine Regulations existing between England and Canada, and between Canada and the United States, are most harmful.

The persons chosen to speak on these questions are among the best known, the most experienced and the most successful agriculturists on the continent

Farmers are urgently invited to attend this meeting. We, as a class, have serious grievances, which can be overcome by united action.

Your presence and co-operation at the meeting are respectfully requested.

President:
HON. THOS. BALLANTYNE, Stratford.

Secretary:
F. W. HODSON, Guelph.

Please Post in a Conspicuous Place.

N. B.—This Bill was printed in red and blue on white paper.

RULES GOVERNING DELEGATES.

1. Each speaker is expected to master thoroughly the Act and the rules governing institutes.

2. Each delegate is requested to study thoroughly the conditions and needs of the district to which he or she is sent as a speaker, and to prepare his addresses or papers accordingly.

3. The person whose name is placed first on the list in each division is chairman of that deputation, and is expected wisely to direct and control the work of that delegation, also the institute meetings to which he is sent.

4. Each delegate is required to forward to the Superintendent a copy of at least one of his or her addresses; (the one which has proved most acceptable to the hearers preferred, or the one chosen by the Superintendent), and if possible a synopsis of the debate thereon and questions and replies thereto, which will be published in the annual report of farmers' institutes or elsewhere as decided by the Superintendent. Heretofore some of the speakers have withheld their best addresses, not wishing them published, fearing that it would detract from their future usefulness. This is a mistake. The publication of an able address increases the demand for the speaker, and the public desire to hear that particular address delivered.

5. Each delegate is requested to do all in his or her power to cause full and free discussion after each paper or address has been delivered, and each deputation is requested to procure and forward to the Superintendent the name and address of each successful local speaker or essayist, and to obtain all the information possible concerning such persons; also to inform the Superintendent concerning the peculiar needs of the district visited, as far as institute work is concerned. Also to forward a short report of each meeting. Was each gathering successful? If not, why not? After the meetings are thus reported the Superintendent will be pleased to receive from each deputation suggestions and advice regarding institute work in general or in any section. How can the efficiency of this important department be increased and made more valuable to the country? Each delegate or deputation is expected to give the Superintendent and the officers of institutes generally the full benefit of his or her experience.

6. The dates and hours of the institute meetings each delegate shall attend will be published annually. Each delegate is requested to arrive at each place for which he or she is advertised at the hour named or a little before, and to continue in attendance during said meeting, and enthusiastically and promptly to do his or her duty irrespective of what others may do. Should sickness or other serious cause intervene, the chairman of the deputation shall telegraph the Superintendent, in order that the vacancy may be promptly filled.

7. Long speeches, or those calculated to advertise the property of the speaker, are contrary to the rules governing institutes. Party politics in any form shall be avoided by each speaker when out on Institute work. The chairman of each delegation and the officers of each institute are expected to see that nothing of this kind occurs. Institute speakers are expected to teach practical agriculture, nothing else.

8. Each delegate shall pay his or her expenses to the opening meeting. The chairman of each respective deputation will refund said sum and will thereafter pay all expenses of the deputation. If a delegate does not know the way to reach the first place of meeting most quickly, the necessary information may be obtained by writing to the Superintendent, or better still, by calling on the nearest ticket agent, who will give the necessary information.

9. As soon as the work of a deputation is completed said persons shall forward to the Superintendent all aforesaid reports, and shall furnish the financial statement in duplicate on forms provided for the purpose. All sums of one dollar and upwards shall be verified by a voucher. A delegate's allowance will not be paid until his or her returns are complete.

10. In the case of a deputation, the above reports shall be made jointly and signed by each member of the deputation, except the financial statements, which shall be made by the chairman only. Supplementary speakers shall furnish reports giving similar information.

11. A cheque for a suitable sum to pay actual expenses will be forwarded by the Superintendent to the chairman of each deputation before the opening of the first meeting.

12. The necessary expenses of each delegate are paid by the Department from the time he or she leaves home until said person returns thereto; but each is expected to exercise due economy. Each delegate will receive a daily remuneration for services for the time absent from home, Sundays excepted, but each shall go and return by the shortest and quickest route.

13. *Finally remember:* Thorough preparation is the key to success as an institute worker. If you have little experience in this line, carefully write your papers and make them short. Speakers should be careful to ascertain the time limit assigned them on the programme, and be sure to keep within said limits; the papers and talks should be illustrated as far as possible by means of blackboard work, charts, diagrams, models, specimens, etc. Discuss themes on which you are thoroughly and practically well informed, and use your own experience and that of others to enforce what you say. Avoid personalities. Be courteous; be helpful. Every time you speak aim to enforce some practical lesson adapted to the needs of the audience.

(*Schedule B.*)

Districts in which Farmers' Institutes may be Organized.

Addington, North: The townships of Kaladar, Kennebec, Olden, Oso, Barrie, Clarendon, Palmerston, Effingham, Abinger, Miller, North and South Canonto, Ashby, Denbigh, and Anglesea.

Addington, South: The townships of Camden, Sheffield, and Hinchinbrook.

Algoma, Centre: The townships adjacent to Sault Ste. Marie.

Algoma, East: The townships adjacent to Thessalon.

Algoma, West: The townships adjacent to Rat Portage, and west to the Manitoba boundary.

Amherst Island.

Brant, North: The townships of South Dumfries, Onondaga, and the northerly portion (hereinafter described) of the Township of Brantford.

Brant, South: The townships of Burford, Oakland, Tuscarora, the southerly portion of the Township of Brantford, and the city of Brantford.

The said northerly portion of the Township of Brantford includes and consists of all that portion of the said township which lies on the northerly side of the Grand River; and the said southerly portion of the said township includes and consists of all the remainder of the said Township of Brantford.

Brockville: The townships of Elizabethtown, Front of Yonge, Front of Escott, and Rear of Yonge and Escott.

Bruce, South: The townships of Brant, Carrick, Culross, and Kinloss.

Bruce, Centre: The townships of Greenock, Kincardine, Elderslie, and Huron.

Bruce, North: The Townships of St. Edmunds, Lindsay, Eastnor, Albemarle, and the north part of Amabel.

Bruce, West: The townships of Bruce, Saugeen, Arran, and the south part of Amabel.

Carleton: The townships of Fitzroy, Goulbourn, Gower North, March, Huntley, Marlborough, Nepean, and Torbolton.

Cornwall: The Township of Cornwall.

Dufferin: The townships of Mono, Melancthon, Amaranth, and Mulmur.

Dundas: The townships of Matilda, Mountain, Williamsburg, and Winchester.

Durham, East: The Townships of South Monaghan, Manvers, Cavan, and Hope.

Durham, West: The townships of Clarke, Darlington, and Cartwright.

Elgin, East: The Townships of Bayham, Malahide, Yarmouth, and South Dorchester.

Elgin, West: The townships of Southwold, Dunwich, and Aldborough.

Essex, North: The townships of Tilbury West, Tilbury North, Rochester, Maidstone, Sandwich East, Sandwich South, and Sandwich West.

Essex, South: The townships of Mersea, North Gosfield, South Gosfield, North Colchester, South Colchester, Malden, and Anderdon, and the municipality of Pointe au Pelee Island.

Frontenac: The townships of Kingston, Wolfe Island, Pittsburgh, Garden Island, Howe Island, Storrington, Portland, Bedford, and Loughborough.

Glengarry: The townships of Charlottenburg, Kenyon, Lancaster, and Lochiel.

Grey, Centre: The townships of Osprey, Collingwood, Proton, Artemesia, Euphrasia, and Holland.

Grey, North: The townships of St. Vincent, Sydenham, Sullivan, Derby, Keppel, and Sarawak.

Grey, South: The Townships of Bentinck, Glenelg, Normanby, and Egremont.

Grenville, South: The townships of Edwardsburgh, and Augusta.

Haldimand: The townships of Oneida, Seneca, Cayuga North, Cayuga South, Rainham, and Walpole.

Haliburton: The townships of Lutterworth, Snowden, Glamorgan, Dysart, and Minden.

Halton: The townships of Esquesing, Nassagaweya, Nelson, and Trafalgar.

Hastings, North: The townships of Rawdon, Huntingdon, Elzevir, Madoc, Marmora Lake, Tudor, Ranger, Carlow, Cashel, Mayo, Dungannon, Faraday, Grimsthorpe, Herschel, Limerick, Airy, McClure, Monteagle, Wicklow, Wollaston, Sabine, Lyell, Murchison, and Robinson, and any other surveyed townships lying to the north of the said North Riding.

Hastings, East: The townships of Thurlow, Tyendinaga, and Hungerford.

Hastings, West: The city of Belleville, the Township of Sidney, and the town of Trenton.

Huron, East: The townships of Howick, Grey, Morris, McKillop, and those parts of Hullett and Turnberry, respectively, which lie east of the road commonly called the gravel road.

Huron, South: The townships of Tuckersmith, Usborne, Stephen, Hay, and Stanley, and that portion of the township of Goderich south of the line known as "the 6th line" and Huron road.

Huron, West: The townships of Ashfield, Wawanosh, (East and West) Colborne, and those parts of Hullett and Turnberry respectively, which lie west of the road commonly called the gravel road, and that part of the township of Goderich north of the said Huron road and "cut line."

Kent, East: The townships of Zone, Camden (with the Gore thereof) Orford, Howard, and Harwich.

Kent, West: The townships of Romney, East Tilbury, Raleigh, Dover East, Dover West, and Chatham.

Lambton, East: The townships of Bosanquet, Warwick, Plympton, Brooke, and Euphemia.

Lambton, West: The townships of Sombra, Dawn, Moore, Euniskillen, and Sarnia.

Lanark, North: The townships of Sherbrooke North, Dalhousie, Lanark, Ramsay, Lavant, Darling, and Pakenham

Lanark, South: The townships of Montague, Elmsley North, Elmsley South, Burgess North, Sherbrooke South, Beckwith, Drummond, and Bathurst.

Leeds and Grenville, North: The townships of Kitley, Wolford, Oxford, and South Gower.

Leeds, South: The townships of Burgess South, Front of Leeds and Lansdowne, Rear of Leeds and Lansdowne, South Crosby, North Crosby, and Bastard.

Lennox. The townships of Richmond, Adolphustown, North Fredricksburg, South Fredricksburg, and Ernestown.

Lincoln: The townships of Niagara, Clinton, Grantham, Grimsby North, and Louth.

Manitoulin, East: The townships of Assiginack, Sheguiandah, Tehkummah, Sandfield, Bidwell, Howland, and Carnarvon.

Manitoulin, West: The townships of Billings, Allan, Campbell, Mills, Gordon, Burpee, Robinson, and Dawson, and Cockburn and Barrie Islands.

Middlesex, North: The townships of McGillivray, Biddulph, Lobo, Williams East, Williams West, and Adelaide.

Middlesex, East: The townships of West Nissouri, North Dorchester, Westminster, and London.

Middlesex, West: The townships of Delaware, Caradoc, Metcalfe, Mosa and Ekfrid.

Monck: The townships of Grimsby South, Dunn, Canborough, Pelham, Moulton, Sherbrooke, Caistor, Gainsborough, and Wainfleet.

Muskoka Centre: The townships of Watt, Stephenson, Medora, and Wood, Branch Institute, Port Carling.

Muskoka, North: The townships of Cardwell, Stisted, Chaffey, Sinclair, Brunel, and Franklin.

Muskoka, South: The townships of Monck, Macaulay, McLean, Draper, Muskoka, Oakley, and Ryde.

Nipissing, East: That portion of the electoral district, of Nipissing comprising the townships of Cameron, Papineau, Calvin, Bonfield, Ferris, Chisholm, Boulter and Bauder, and the townships in the said district lying to the north of the river Mattawa, and to the east of the easterly boundary line of the townships of Widdifield, Mulock, Hart, and Garrow, and the said boundary line continued north to the Ottawa river.

Nipissing, West: That portion of the electoral district of Nipissing not contained as above stated in the district of Nipissing East.

Norfolk, North: The townships of Middleton, Townsend, and Windham.

Norfolk, South: The townships of Charlotteville, Houghton, Walsingham, and Woodhouse, with the Gore thereof.

Northumberland, East: The townships of Cramahe, Brighton, Percy, Murray, and Seymour.

Northumberland, West: The townships of Hamilton, Haldimand, and Alnwick.

Ontario, North: The townships of Uxbridge, Brock, Scott, Thorah, Mara, and Rama.

Ontario, South: The townships of Whitby, East Whitby, Pickering, Scugog, and Reach.

Oxford, North: The townships of East Nissouri, East Zorra, West Zorra, Blanford, and Blenheim.

Oxford, South: The townships of North Oxford, West Oxford, East Oxford, North Norwich, South Norwich, and Dereham.

Parry Sound, East: That portion of the electoral district of Parry Sound, as at present constituted, lying to the east of the westerly boundary lines of the townships of McMurrich, Ryerson, Chapman, Lount, Pringle, and Patterson.

Parry Sound, West: That portion of the electoral district of Parry Sound, as at present constituted, not included as above in the district of Parry Sound East.

Peel: The townships of Albion, Caledon, Chinguacousy, Toronto, and the Gore of Toronto.

Perth, North: The townships of Elma, South part of Wallace, Logan, Ellice, Mornington, and North Easthope.

Perth, South: The townships of Blanshard, Downie, South Easthope, Fullarton, and Hibbert.

Peterborough, East: The townships of Otonabee, Douro, Asphodel, Dummer, and Belmont.

Peterborough, North: The townships of Methune, Burleigh, Cardiff, Anstruther, Chandos, and Monmouth.

Peterborough, West: The townships of North Monaghan, Smith, Ennismore, Harvey, Galway, and Cavandish.

Prescott: The townships of Alfred, Caledonia, Hawkesbury East, Hawkesbury West, Longueil, Plantagenet North, and Plantagenet South.

Prince Edward: The townships of Ameliasburg, Athol, Hallowell, Hillier, Marysburgh North, Marysburgh South, and Sophiasburgh.

Rainy River: The townships in the valley of Rainy Lake and Rainy River.

Renfrew, North: The townships of Ross, Bromley, Westmeath, Rolph, Stafford, Pembroke, Wilberforce, Alice, Petewawa, McKay, Buchanan, Wylie, Head, Maria, Fraser, and Clara.

Renfrew, South: The townships of McNab, Bagot, Blithfield, Brougham, Horton, Admaston, and Grattan.

Renfrew, West: The townships of Matawatchan, Griffith, Sebastapol, South Algona, North Algona, Richards, Hagarty, Burns, Brudenell, Lyndoch, Sherwood, Radcliffe, Raglan, and Jones.

Russell: The townships of Cambridge, Clarence, Cumberland, Russell, Gloucester, and Osgoode.

Simcoe, East: The townships of Orillia, Matchedash, Medonte, Oro, and Morrison.

Simcoe, Centre: The townships of Tiny, Tay, Vespra and Floss.

Simcoe, West: The townships of Sunnidale, Nottawasaga, and Tossorontio.

Simcoe, South: The towhships of Essa, Innisfil, West Gwillimbury, Tecumseh and Adjala.

Stormont: The townships of Finch, Osnabruck, and Roxborough.

St Joseph Island.

Thunder Bay: The townships adjacent to Port Arthur, and Fort William.

Victoria East: The townships of Emily, Verulam, Fenelon, Bexley, Summerville, and Laxton.

Victoria, West: The townships of Ops, Mariposa, Eldon, Carden, Dalton, Digby, and Longford.

Wabigoon: The townships adjacent to Wabigoon Lake and River.

Waterloo, North: The northerly portion hereinafter described, of the township of Waterloo, the townships of Woolwich, and Wellesley.

Waterloo, South: The southerly portion of the said township of Waterloo, the townships of North Dumfries, and Wilmot.

The said northerly portion of the township of Waterloo shall include and consist of that part of the said township lying within the following limits, that is to say: Commencing at the south-west angle of lot number forty-six in the said township; thence easterly along the southerly limits of the said lot, and of the lots number forty-seven, forty-eight, fifty, fifty-one, fifty-three, and the prolongation thereof, to the middle of the Grand River; thence along the middle of said river against the stream, to the prolongation of the limits between lots one hundred and thirteen and one hundred and fourteen, and along the prolongation of the limit between the said lots number one hundred and thirteen and one hundred and fourteen, and along the limits between the said lots one hundred and fourteen northerly and easterly, to the western limits of lot one hundred and seven; thence along the westerly limits of the said lot number one hundred and seven northerly to the northerly limits thereof; thence along the northerly limits of the said lot number one hundred and seven, and of lots numbers one hundred and six, eighty-four and ninety-six easterly to the easterly boundary of the said township; thence along the easterly, northerly and westerly boundaries of the said township in a northerly, westerly and southerly direction, respectively, to the place of beginning; and the said township of Waterloo shall include and consist of all the remaining part of the said township.

Welland: The townships of Bertie, Crowland, Humberstone, Stamford, Thorold and Willoughby.

Wellington, Centre: The townships of Pilkington, Nichol, Garafraxa West and East, and the north part of Erin.

Wellington, East: The townships of Arthur, West Luther, East Luther, and the south part of Proton.

Wellington, South: The townships of Puslinch, Guelph, Eramosa, and South part of Erin.

Wellington, West: The townships of Peel, Maryborough, and North part of Wallace. Branch Institute: Union: The townships of Minto, and part of the townships of Howick, Carrick, and Normanby.

Wentworth, North: The townships of Beverly, Flamborough West, and Flamborough East,

Wentworth, South: The townships of Satlfleet, Binbrook, Glanford, Barton, and Ancaster.

York, East: The townships of Markham and Scarborough, and that portion of the township of York lying east of Yonge Street.

York, West: The townships of Etobicoke, and Vaughan, and that portion of the township of York lying west of Yonge Street.

York, North: The townships of King, Whitchurch, Georgina, East Gwillimbury, and North Gwillimbury.

NOTE.—The townships hereinbefore mentioned include all cities, towns, and incorporated villages situated within the limits thereof respectively.

Although the Institute Districts are here outlined, nothing in the Act, Rules and Regulations, or in Schedule B shall be construed to prevent anyone from joining any institute he or she pleases. An institute officer or other authorized person may receive membership fees from any person irrespective of their place of residence; but Institutes should not hold meetings outside of their prescribed Districts.

Some officers suppose that the policy of establishing rules to govern Farmers' Institutes is new; this is not the case. Ever since the formation of institutes in Ontario, the rules of the Department required that the institute year close June 30th. It is true some of the institutes have heretofore been allowed to hold their annual meeting during the winter months; because of this the institute system became very ununiform and perplexing. When a Superintendent was appointed the Department determined to introduce a uniform system.

In the drafting of the Act and Rules great care was exercised to make them Provincial and not local in character. The Act and Rules governing Farmer's Institutes stands in the same relation to institutes that the school law does to our school system, and the

Agriculture and Arts Act does to our agricultural exhibitions, and will be enforced in like manner. These laws are made to bring about uniformity and to be a benefit to the people, not to be burdensome to them in any way. The new rules have been in force for two seasons; and the results, as shown on page 3, have been most satisfactory. Systemized effort, brought about by the new rules and regulations, has not only decreased the cost of each meeting and increased the membership of local institutes, but has made it possible to obtain better service in every branch of institute work. Men who three years ago scoffed at institute work are now enthusiastic supporters of local institutes. Yet this work is only commencing.

DELEGATES.

One of the most difficult and important tasks is the selection of speakers to address institutes. Dr. Mills exercised great care in the selection of speakers; and as soon as I took office, I sent a copy of circular No 90 to the Secretary and President of each of the hereafter named Associations: The Fruit Growers' Association, The Entomological Society, The Dairymen's Association of Eastern and Western Ontario, The Dominion Sheep Breeders' Association, The Dominion Swine Breeders' Association, The Ontario Creameries Association, The Poultry Association, and The Beekeepers' Association. A copy of this circular was also sent to the President and Secretary of each local institute in the Province.

CIRCULAR No. 90.

GUELPH, ONT.

DEAR SIR,—I am now preparing a list of speakers to address Farmers' Institutes, a copy of which will be sent to the officers of each institute in Ontario. Each speaker will be required to prepare four or five papers or addresses, three for day delivery, and one or two suitable to deliver at evening meetings. Will your officers select a number of gentlemen who are able and willing to engage in this work? Kindly enlist the services of your best men. When you send me the list of names, send me particulars regarding each man, his name and address, and what his experience has been. Do not send the name of anyone simply because you desire to honor him; I want the names of practical, experienced, and successful men only. Delegates will be suitably remunerated for their services. Kindly give me full particulars regarding each of the speakers who has recently visited your institute.

I wish each Association receiving a Government grant to be fairly represented on the institute staff, and will hold each Association responsible for the work done by their representatives. I trust you will give the institute system your hearty support and co-operation. All information sent by you will be considered strictly confidential. A reply by the 20th inst. respectfully solicited.

Yours truly,

F. W. HODSON

In reply to this circular I received a great many names and much valuable information. After careful enquiry, the speakers for the season of 1894-5 were chosen. As soon as they had completed their work, I at once issued circulars Nos. 91 and 92, sending a copy of No. 91 to each person engaged as a speaker, and a copy of No. 92 to each officer and director of each institute in the Province.

CIRCULAR No. 91.

(*Copy sent to each Speaker.*)

GUELPH, ONT.

DEAR SIR,—Now that you have completed your work among the institutes, will you kindly send me your report. I would like to receive your report as required by the Act and Rules. In this, give me a short account of the meetings in each riding you visited. Was each gathering successful? If not, why not? Please deal as plainly with these questions as you deem prudent.

After you have thus reported each meeting, I shall be pleased to receive from you general suggestions and advice regarding institute work. How can we increase the efficiency of this important department and make it more valuable to the country? Kindly give me and the officers of institutes generally the benefit of your experience.

Will you also favor me with a private report, which I will consider strictly confidential. In it you will tell me how your colleagues succeeded. Kindly give me the name and address of each successful local speaker or essayist, and the subject on which he spoke.

Did you meet any persons who were suitable to act as delegates to institute meetings? If so, kindly give me the name and address of each. Any other information you favor me with will be thankfully received.

At your earliest convenience please forward me a copy of one or two of your most popular addresses. An immediate reply respectfully solicited.

Yours truly,

F. W. HODSON.

CIRCULAR No. 92.

(Copy sent to each Institute Officer.)

GUELPH, ONT.

DEAR SIR,—The institute season has now closed, and I thank you for your support and co-operation in the past, and ask for a hearty continuation of the same in the future.

I realize that great care is necessary in choosing speakers. I am now beginning to think of my staff for next season. Will you tell me how each of the speakers did who were sent to your district? Do you consider each a capable and suitable person for this work?

By this mail I send you a copy of the special bulletin. On pages 22 to 36 you will find a list of available speakers. Kindly look this list over, and if you find there, or in any other part of the bulletin, the name of any person you deem unfitted to take part in this kind of work, kindly notify me.

Please co-operate with me in this matter. Any information you may send me will be considered strictly confidential.

Yours truly,

F. W. HODSON.

Circulars 90, 91 and 92 are samples of letters issued each year from my office. After the receipt of all the information, a list of speakers is annually prepared, similar to that which appears on pages 23 to 33, inclusive. After exhaustive enquiry, both personally and by letter, delegates for the season are chosen from among the names which appear in the latest list. Delegates are chosen because of their record; political reasons, expediency, friendship, or influence are never considered in the slightest degree. Nothing is considered but the ultimate success of the institute work. If the speakers are other than first-class, institute officers and directors are themselves largely to blame. None are published in the list of available speakers but such as have been recommended by reliable parties, after which the names are submitted to responsible officers. I have done all in my power to obtain the facts concerning each man, and a record of these facts is carefully kept, but is not made public.

The following list of speakers has been prepared for 1896-7. Institute officers and members are respectfully requested to examine this list critically, and if the name of an unsuitable person is found, to inform me promptly of the fact, or if the name of a suitable person is omitted, to send me the name and address of such person and all particulars concerning him or her. All data sent is considered strictly confidential.

LIST OF AVAILABLE SPEAKERS FOR 1896-7.

Many Institute officers have in the past complained of the difficulty they have experienced in obtaining the services of suitable persons to read papers, deliver addresses, or lead in the discussions at meetings of Farmers' Institutes. To overcome this difficulty, the officers of Institutes, regular delegates, the executive of each society chartered under the Agriculture and Arts Act, and other reliable parties were requested to prepare and submit a list of experts and specialists capable and willing to take part in this work.

The names sent in reply have been alphabetically arranged, and opposite the name is given the electorial district in which the person resides. Beneath each name is a list of subjects, and in most cases the period during which said speaker is available.

The time required to deliver each address will vary from fifteen to thirty minutes, according to the requirements of the programme.

The discussion following each address should vary from ten to forty minutes. Full discussion should always be encouraged.

Institute officers may obtain the services of any of these speakers within the indicated time by applying directly to the individual. A month's notice should be given a speaker in every case, to allow him or her sufficient time for preparation. When engaging a speaker, always indicate the subject you wish discussed.

Unless otherwise arranged between the officers and the speaker, Institutes employing any of the above mentioned speakers will be required to pay his or her travelling expenses from the time the person leaves home until he or she returns thereto, together with a fee of $2.50 per day for a corresponding period, Sundays excepted.

ARKELL, HENRY, Teeswater. (E. Bruce):

"Sheep Husbandry," "Cattle Feeding," "Management and Application of Manure." Evening subjects: "Root Culture," "Farming Past and Present."
Available any time.

BEAM, J. F., Black Creek. (Welland):

"How to Make and Market Small Sized Factory Cheese for Local Use and Increase Home Consumption and Profit," "Raising a Dairy Herd," "Advantages of Dehorning," "Corn Growing and Stock Raising," "Hired Help on the Farm," "Constructing Earth and Stone Roads." Evening subjects: "Country *versus.* City Life," "Special *versus.* General Farming."
Available any time.

BURRELL, M., St. Catharines. (Lincoln.):

"Insects and their relation to the Farmer and Fruit Grower," "Stone Fruits and Some of Their Pests," "Theory and Practice of Horticulture," "Superstitions of the Farm," "Ethics of the Market," "The Mental and Moral Atmosphere of the Farm Home."
Available in January and February.

BROWN, ALF., Picton. (Prince Edward.):

"Lambs for Profit," "Clover and Short Rotation, the Cheapest Way of Keeping up Fertility." "Sweet Corn *versus* Flint and Dent Varieties," "Experiments Necessary for Selection of Best Varieties of Grains and Grasses," "Farmer's Vegetable Garden," "Growing Potatoes and Preventing Diseases of Same," "New Onion Culture," "Hot Beds," "The Farmer's Fruit Garden—Strawberries, Raspberries, Gooseberries, Grapes." "Spraying, Pruning, and Grading for Market," "How to Retain Moisture in Surface Soil," "Planting and Care of Shade Trees and Wind Breaks," "Selecting Poultry for Winter Layers," "Packing and Marketing Eggs," "Educate Young People by Practical Experience," "Ontario Agricultural College."
Available December to April.

BROWN, JAS., Kent Bridge. (Kent.):

"Cultivation of Corn," "Rearing of Swine," "Education of Farmers' Sons," "Farmers' Societies and Organizations," "The Business Methods of the Average Farmer."
Available any time after January 1st.

BEADLE, D. W., M. A., 303 Crawford St., Toronto.:

"The Stinking and the Loose Smut of Wheat; the Loose Smut of Oats; Barley, Rye and Corn Smuts," illustrated with drawings of smutted heads and implements used in the Jensen hot-water treatment. "Clover Insects, Root-Borer, Leaf-Weevil, Seed-Midge, Head-Caterpillar, Cut-Worms, and Grasshoppers," illustrated with drawings. "Cabbage Butterfly, and Root Maggot; Grain Plant-Louse, with drawings; Potato-Scab and Potato-Rot," "The Apple Tree, Planting, Pruning and Cultivation; Best Varieties for Market; Packing and Marketing," with illustrations. Evening subjects: "Parasites Injuring Fruit Trees and Fruits, and the Injuries They Produce, portrayed by the Magic Lantern," "The Importance and Benefits of Spraying, explained and illustrated with the Magic Lantern," "Insect Friends, the Importance of Being Able to Recognize Them," "Pictures of the Carpet Beetle by the Magic Lantern; Its Habits Explained and Best Way of Getting Rid of the Pest," "Insects Injuring Fruit Trees and Fruits," with portraits by the Magic Lantern.
Available any time.

CAMPBELL, A. W., C.E., Provincial Instructor of Road Making, Toronto:

"Road Making," "Farm Drainage."

CHAMBERS, J. N., Woodstock. (S. Oxford.):

"The Dairy Cow and How to Care for Her," "The Advantages of All the Year Dairying," "The Creamery," "The Injustice of Pooling Milk," "Hay Raising in Connection with the Dairy," "Ensilage, its Value and How to Grow and Store it," "The Importance of Hoe Crops." "The Necessity of Improving the Methods of Road Making." Evening subjects: "The Farmer," "An Educated Husbandry," "Business Methods," "Canada."
Available any time.

CASTON, G. C., Craighurst. (Simcoe.):

"The Best Varieties of Orchard Fruits and How to Grow Them, special reference being Made to Top Grafting on Hardy Stock," "Best Varieties of Small Fruits and the Modes of Cultivation," "Poultry on the Farm." Evening subjects: "Horticulture on the Farm," "Lights and Shadows of Farm Life," "The Ontario Agricultural College."
Available any time.

CHRISTIAN, A. H., B. S. A., Brooklin. (Ontario.):

"Silo and Silage," "Weeds," "Insects and How to Fight Them," "Science in Feeding." Evening subjects: "Farm Implements, Uses and Abuses," "The Ontario Agricultural College."
Available any time.

COWIE, J. G., Caledonia. (Haldimand.):

"Dairy Cheese Making," "Cherry Culture," "Keeping Farm Accounts," "Country Libraries."
Available any time.

CASSELMAN, W. H., Chesterville. (Dundas):

"How to Plan and Build, Economically, Useful Dairy Buildings; the Important Place they Occupy in the Economy of Successful Canadian Dairy Farming," with canvas views. "A Cure for the Hard Times," "All-Year-Round Dairying," "The Necessity for Co-operation," "The Care and Handling of Milk and Cream for Town and City Use." Evening Subjects; "Canadian Rural Home and Social Life as it is and as it might be," "How the Farmers' Wives and Daughters may Help."

Available any time.

CLORAN, H. J., Hawkesbury. (Prescott.):

"The Farm in Relation to the Life and Prosperity of the Nation," "The Canadian Farmer's Home and Foreign Markets," "The Advantages of a Home on the Farm."

Available any time.

CHAMBERS, A., Monkton. (Perth):

"How to Improve Dairy Products," "Selection and Care of a Dairy Herd," "Butter-making on the Farm," "The Dairy," "The Benefit of Co-operation," "Marketing Dairy Products.

Available January 1st to April 1st.

COOK, JOHN H., Gordonville. (N. Wellington.):

"Rearing Calves," "Lessons Taught by Experience," "Agricultural Education."

Available in January.

CLELAND, ROBERT, Listowel. (N. Perth.):

"Dairy Farming," "Breeding and Feeding Dairy Stock," "Rotation of Crops," "Care of Manure."

Available any time after January 1st.

CURTISS, H., Warkworth. (E. Northumberland.):

"Poultry on the Farm," "Winter Poultry Shows," "Swine Breeding," "Why Young Men Leave the Farm." "Grain Growing," "The Farmer's Garden," "Horse Breeding," "Bee-keeping."

Available any time.

DAVIDSON, J. FRED, Peterborough. (W. Peterborough.):

"Growing Field Roots and their Value on the Farm," "Care and Management of Live Stock," "Cultivation of of the Soil." Evening subjects: "The Value of Appearances," "Life on a Farm, the Advantages thereof."

Available any time after January 15th.

DAVIDSON, ALBERT, Glandine. (South Victoria.):

"Horse Breeding," "What Prevents Prosperity," "Social Life on the Farm," "Ownership of Land."

Available any time.

DRURY, HON. CHAS., Barrie. (N. Simcoe.):

"Breeding and Feeding Beef Cattle," "Underdraining and Benefits therefrom," "Defective Methods in Farming." Evening subjects: "Farming as an Occupation."

DEARNESS, J., London. (Middlesex.)

"Friends and Foes Among the Fungi," "Weeds, especially Recent Ones," "Education of Farmers' Children."

Available any time,

DOUGLAS, T. C., Galt. (S. Waterloo):

"Fall and Winter Care of Breeding Ewes," "Care and Management of Manure," "Growing Roots," "Care and Feeding of Stock."

Available any time, but from January 15th to the end of February most suitable.

DEAN, H. H., B. S. A., Professor of Dairy Husbandry, O. A. C., Guelph:

"The Dairy Cow, How to know Her and how to get Her," "Feed and Care of the Dairy Herd," "Care of Milk for Cheese Factory and Creamery," "The Cream Separator," "How to Divide Money among Patrons of Creameries and Cheese Factories Equitably," "The Value of Dairy By-products, Whey, Buttermilk and Skim-milk." Evening Subjects: "Farm Butter-making," "Food Economy in the Home," "Dairying in Europe," "Some Needs of the Dairy Market and How to Fill Them," "The Ontario Agricultural College."

DAY, G. E., B. S. A., Agriculturist, O. A. C., Guelph:

"Management of Dairy Cattle," "Feeding Standards and Composition of Foods" (Illustrated with chart), "Selection in Stock Breeding," "Soiling and Soiling Crops," "Corn and the Silo," "Manures," "Management and Breeding of Pigs." Evening Subjects: "Invisible Plants," "The Ontario Agricultural College."

DUFF, THOS. A, Toronto:

"Poultry and its Relation to the Farm," "Method of Caring for, feeding and housing Poultry," Fertile versus Infertile Eggs," "Poultry and Fruit Combined," "Care of Eggs and Method of Marketing Same so as to obtain the best Profit Therefrom," "Market Poultry," "The Requirements of the English Market." "Co-operate with Your Buyer," "The Value of Farmers' Institutes," "Diseases of Poultry and Simple Cures," "Canada our Home."

Available any time."

DAVIS, CYRUS, Perth. (S. Lanark.):

"Gardening for Profit," "Grape Growing, Propagating Small Fruit and their Management," "Onion Growing from Seed," "How to Transplant in Dry Weather," "Making and Management of Hot Beds for Early Vegetables," "How and When to plant Fruit and Vegetables."
Available any time.

DYER, Wm. D., B.S.A., Columbus. (S. Ontario.)

"Weeds, their Distribution and Prevention," "Summer Cultivation," "Regulating Soil Moisture," "Under-draining," "Selling Cattle for Beefing Purposes."
Available at any time.

EWING, J. B., Dartford. (E. Northumberland.):

"Care and Management of Swine," "The Hog as an Adjunct to the Dairy," "Care and Management of Sheep," "Corn Culture," "Clover Culture," "Dairying Twelve Months in the Year," "Our Fodder Crops." Evening Subjects: "The Training and Education of Boys for the Farm," "Topics of the Times."
Available December 10th until March 10th.

ELLIOTT, A., Galt. (S. Waterloo.):

"The Dairy Farm." Illustrated. "The Necessity of Feeding a Balanced Ration to Dairy Cows," "Soiling Dairy Cows." "The Silo and Silage," "Growing and Feeding Turnips," "Sheep Breeding for Profit," "Should we Increase our Flocks of Sheep?" "Sheep *versus* Dogs," "The Hog for the Market." Evening Subjects: "Economy," "Give the Children a Chance."
Available December until April.

EVERTTS, M. K., Easton's Corners. (N. Grenville.):

"The Transportation of our Dairy Produce." "The Branding of Cheese." "The Future of our Cheese Industry."
Available after January 1st.

EVERTTS, MILTON, Easton's Corners. (N. Grenville.)

"Feeding and Care of a Dairy Cow," "The Care of Milk," "The Relation of the Patron to the Cheese Makers," "The Work done by the Inspectors."
Available any time.

FRASER, W. S., Bradford. (Simcoe.):

"Clover Growing and Curing," "Beef-rings Among Farmers." "Tree Planting for Shade and Wind Break," "Hog Raising," "Sheep Raising for Profit," "Corn and the Silo," "Underdraining." Evening Subjects: "Butter-making on the Farm," "Farmers' Needs."
Available any time.

FERGUSON, J. J., B. S. A., Smith's Falls. (Leeds.):

"The Corn Crop From Start to Finish," "The Feeding of Farm Animals," "Breeding and Feeding Special Purpose Dairy Animals," "The Food Supply for Dairy Cows," "The Dairy Cow." Evening Subjects: "Mind and Muscle," "Agricultural Education; Do we Need it?" "The Ontario Agricultural College," "Little Things."
Available any time.

FICHT, V., Oriel. (S. Oxford.)

"Cultivation of the Soil for Grain, for Roots and for Corn," "Breeding and Care of Sheep," "Cattle Breeding," "General Farming *versus* Special Farming," "Advice to Young Men."
Available any time.

FRITH, J. E., Princeton. (N. Brant.)

"Rearing Young Pigs," "Specialties on the Farm," "Poultry on the Farm," "Bee-keeping on the Farm."
Available any time.

FRAZER, JOHN Z., Burford. (S. Brant.):

"Cultivation of the Soil," "Clover and its Uses," "Eradication of Weeds" "The Farmers's Garden," "The Future of Wheat Growing." Evening subjects: "A Talk to Young Farmers," "Glimpses of the Great Fair."
Available any time.

GOULD, JOS. E., Uxbridge. (N. Ontario.)

"The Value of Ensilage," "Cultivation of Corn," "How to Contruct a Cheap Silo," "Feeding and Care of Dairy Cows," "Dairying *versus* Grain Farming," "Care of Farm Implements."
Available any time.

GIBSON, D. Z., Willow Grove. (Haldimand.)

"Value of Humus in the Soil," "Some Wastes about the Farm; the Knowledge and Observation Necessary to Prevent Them," "Benefits from a Rotation of Crops," "Principles of Breeding." Evening Subjects: "The Farmer as a Citizen," "Ontario Agricultural College," "Cultivation of the Mind."
Available any time.

GRAHAM, S. I., Vandeleur. (C. Grey.)

"Care of an Orchard," "Pruning," "Spraying," "Picking, Packing and Shipping Fruit," "Grafting," "The Geology of our Province."
Available any time for short periods.

GLENDINNING, H., Manilla. (Victoria.):

"The Growing and Marketing of Grain," "The Growing and Marketing of Red and Alsike Clover Seed," "Weeds on the Farm," "The Farmer's Fruit and Vegetable Garden," "Dehorning," "Why Farmer's Sons and Daughters Leave the Farm,"
Available any time.

GIBBARD, W. T., Napanee, (Lennox.)

"Rearing Poultry."
Available any time.

HANMER, Mount Vernon, (S. Brant.)

"How to Establish a Flock," "Mistakes in Stock Breeding," "The Horse Industry," "Preparing the Soil for Wheat," "The Farm Home," "The Best Methods for Increasing the Fertility of the Soil."
Available any time.

HALLMAN, A. C., New Dundee. (S. Waterloo.):

"Cultivation of Fodder Corn and the Silo," "Practical Hints on Swine Husbandry," "The Breeding and Care of Dairy Cattle," "Winter Care of Idle Horses."
Available any time.

HOWARD, S., Powassan. (Muskoka.):

"Selection and Care of Dairy Cows," "Production and Care of Milk," "The Hog as an Adjunct to the Dairy." Evening subjects: "The Benefit Derived from Co-operative Dairying," "Marketing Dairy Products," "The Dairyman as a Manufacturer."
Available December to April.

HOUSTON, WM., M.A., 66 St. Mary Street, Toronto. Superintendent of Teachers' Institutes:

"Agriculture in the Public School," "Forestry in Relation to Agriculture." Evening subjects: "Home Life on the Farm," "Reading for Recreation."
Available from December 1st to January 15th, and February 15th to April 30th.

HONEY, RICHARD, Warkworth. (E. Northumberland.):

"Selection and Care of a Stock Ram," "Selection and Care of a Brood Sow," "Management and Care of Young Pigs," "Evils Resulting from Inbreeding." Evening subjects: "Economical Feeding of Cows," "The Value of the Farmers' Institutes," "Turnip Culture."
Available any time.

HARCOURT, GEORGE, Toronto:

"Fodder Corn and the Silo" (with chart), "Winter Dairying" (with chart), "Dairy Farming" (with chart), "Care of Milk for Cheese Factories," "Butter Making," "Raising Calves for the Dairy," "Stock Breeding," "Stock Feeding" (chart), "Rotation of Crops" (chart), "How to Obtain a Good Dairy Herd" (chart), "Recent Experiments in Sheep Feeding" (chart), "How to Control the Moisture in the Ground" (chart). Evening subjects: "The Future Farmer," "Leakages on the Farm," "The Ontario Agricultural College."
Available any time.

HOPE, JOHN, Palermo. (Halton.):

"Care and Feeding of Dairy Cattle," "Culture and Curing of Fodder Corn." Evening subjects: "How to Keep the Boys on the Farm," "The Farmer's Wife," "The Farmer's Home."
Available any time.

HUNTER, SAMUEL, Rockton. (N. Wentworth.):

"How to Manage a Dairy Farm in Ontario and Make it Pay," "The Winter Care of Dairy Cattle," "The Crops a Dairy Farmer should Grow and how Grow them," "Growing Corn," "Making and Marketing Dairy Butter," "Underdraining," "Building a Silo," "The Farmer's Fruit Garden," "Road Making," "The Advantage of Using a Centrifugal Machine in Dairy Work."
Available any time.

HAYCRAFT, W. J., Agincourt. (E. York.):

"Poultry on the Farm," "Breeding and Managing Swine," "Selection and Care of a Dairy Cow," "Cultivation of Field Roots," "Care of Farm Implements."
Available any time.

HILLBORN, W. W., Leamington. (S. Essex.):

"Underdraining," "The Farmer's Garden," "Cultivation of the Orchard," "Destroying Injurious Insects and Fungi in the Orchard." Evening subjects: "Small Fruits," "The Farmer's Garden," "House Plants."
Available any time.

HOLTERMANN, R. F., Brantford. (S. Brant.):

"The Advantages of Beekeeping on the Farm," "The Advantages of Beekeeping in a New Country," "How to succeed as an Apiarist," "Bees in Relation to Plant Life," "The Wonders of the Honey Bee," "Poultry on the Farm," "The Ontario Agricultural College."
Available any time.

HARCOURT, ROBERT, B.S.A., Chemist, O. A. C., Guelph:

"Wood Ashes; Their Importance on the Farm," "Experiments in Curing Hay," "Drainage: its Importance to Farmers," "How to Improve the Fertility of the Farm," "Rotation of Crops," "Feeding of Hogs." Evening subject: "The Ontario Agricultural College."

HUTT, H. L., B.S.A., Horticulturist, O. A. C., Guelph :

"The Proper Management of an Orchard," "Growing Small Fruits," "Potato Culture," "The Farmer's Vegetable Garden." Evening subjects: "A Talk to Farmer's Sons," "The Care of Flowers and House Plants," "The Ontario Agricultural College."

JACKSON, JOHN, Abingdon. (S. Wentworth.):

"How to Establish a Flock," "Summer Care of a Flock," "Winter Care of a Flock, "The Selection of a Stock Ram," "Preparing a Flock for the Show Ring."
Available any time.

JARVIS, L. G., Manager and Lecturer, Poultry Department, O. A. C., Guelph :

"Poultry at the Ontario Agricultural College," "Method of Feeding Poultry," "Poultry Houses," "Care of Eggs," "Dressing Poultry," "Marketing Poultry," "Diseases of Fowls and Treatment," "How to Prevent Vermin."
Available any time.

KETCHEN, A. P., Brucefield. (Huron):

"Keeping Hogs for Profit," "Culture of Corn, Field Roots and Potatoes," "Breeding, Feeding and Handling Beef Cattle," "Cultivation of the Soil," "Making the most of Ourselves."
Available any time.

LEAVENS, W. B., Chisholm. (Prince Edward.):

"Planting an Orchard: Location, Trees, Pruning, Planting, Cultivating," etc., "Grafting and Budding," "Seed Peas as They are Grown for Foreign Markets; Cultivation, Weeding and Methods of Harvesting the Different Varieties; also the Treatment of Pea Weevil," "The Old Farm House."
Available any time.

LANGFORD, G. R., Kent Bridge. (Kent.):

"Care and Cultivation of Soil," "How to Grow Beans," "Hints on Corn Growing," "Tile Drainage," "Clover Culture." Evening subjects: "Why I am Proud of the Girls and Boys of our Country," "Why I am a Farmer."
Available any time.

LOCKHEAD, WM., B A., M.S., Napanee. (Lennox.):

"Insects Injurious to Farm and Garden Crops and How to Destroy Them," "Insects Beneficial to Farm and Garden Crops," "Weeds." Each of these addresses will be illustrated with specimens of insects and plants.
Available during Christmas and Easter Holidays.

LANCASTER, JOHN, Westwood. (E. Peterborough.):

"The Advantages of Draining," "How to Drain," illustrated, "Why Farming Does Not Pay," "How to Keep the Girls and Boys on the Farm," "The Farmer's Home."
Available any time.

LICK, ELMER, Oshawa. (S. Ontario.):

"How to Control the Moisture in the Soil," "Feeding Dairy Cattle," "The Silo," "Corn and Clover the Best Crops for the Stock Raiser," "Experimental Work," "Growing Apples." Evening subjects: "The Farm Garden," "Agricultural Education," "Co-operation Among Farmers," "The Institute System."
Available January 1st to February 15th.

LEGG, JOHN, St. Marys. (S. Perth.):

"Rotation of Crops," "The Cultivation and Care of the Soil," "Draining," "Subsoiling," "Cultivation and Value of Roots," "Cultivation of Corn," "Temporary and Permanent Pastures," "Breeding and Care of Farm Stock," "Sheep Breeding and Their Value on the Farm," "The Orchard."
Available any time.

MASON, THOS. H., Straffordville. (E. Elgin.):

"Hog Raising," "The Care and Food of Dairy Cattle," "Sheep Raising," "Butter Making." Evening subjects: "The Outlook for the Ontario Farmer," "Ontario Agricultural College."
Available at any time.

MEYER, J. E., Kossuth. (S. Waterloo.):

"How to Treat Poultry so as to Obtain the Greatest Return," "How to Compound Rations to Obtain the Best Results in Feeding our Animals," illustrated, "The Different Breeds of Poultry; Their Uses, Characteristics and Adaptability to the Farm," "The Incubator and Brooder and Their Relation to Poultry Culture." Evening subjects: "A few Thoughts on How to Succeed in Life," "What is Education and What Part Does it Play in Making Successful Farmers."
Available any time.

MORDEN, E., Niagara Falls South. (Welland.):

"Profitable Fruit Culture," "Small Fruits for Profit," "Currants, Varieties and Culture," "Raspberry Culture," "Best Market Varieties of Fruit," "The Farmer's Fruit Garden," "The Common Insects Injurious to Fruits," "Will the Coming Farmers Study Science," "Our Public Roads" Evening subjects: "How to Beautify Our Farms," "How to Arrange Lawns," "Best Hardy Shrubs and Evergreens," "Wind Breaks for Use and Beauty," "Good Roads."
Available any time.

MARSH, G. F., B. S.A., Thornbury. (E. Grey.):

"Dehorning," "Growing Corn," "The Silo," "The Care of an Orchard," "Drainage," "The Ontario Agricultural College," "Breeding Swine," "Winter Dairying."
Available any time.

MORRISON, JOHN C., Winthrop. (E. Huron.):

"Food and Care of the Cow," "Farming for Profit," "Rotation of Crops," "Care of Live Stock," "Why Young Men Should Remain on the Farm," "Feeding Hogs," "Road Making," "Tree Planting and Pruning," "Co-operative Dairying," "The Babcock Test."
Available any time except the 16th and 30th December, and the 6th and 20th of January.

MUIR, J. B., North Bruce. (W. Bruce.):

"Feeding Hogs," "Care and Food of a Dairy Cow," "Butter Making in the Home Dairy," "The Care of Milk," "Saving and Applying Manure," "Underdraining." Evening subject: "Making Farm Life Pleasant."
Available any time.

MOYER, M., 406 Spadina Avenue, Toronto:

"How to Prepare Butter for the City Market," "How the Success of the Creamery Business is Hindered," "Through What Means has the Butter Industry Received the Greatest Help."
Available for a day or two at any time.

MCMILLAN, JOHN, M.P., Seaforth. (S. Huron.):

"Cultivation of Corn," "Preparing Corn for the Silo," "Cultivation of the Soil for Roots or Grain Crops," "Farmers' Institutes," "Underdraining," "Care of the Manure Heap," "How to Apply Manure to the Land," "Breeding, Feeding and Exporting Beef Cattle to Britain," "The Benefits of Dehorning." "The Breeding and Care of Heavy Draught Horses," "Farm Implements," "Make Home Attractive," "Why Boys Leave the Farm."

MCMILLAN, THOS., Seaforth. (S. Huron.):

"Breeding and Feeding Beef Cattle," "Corn Growing and the Silo," "Land Drainage," "Care and Application of Manure," "Cultivation of the Soil for Grain and Root Crops," "Dehorning and its Advantages," "Breeding and Feeding Heavy Draught Horses," "Making our Way in Life," "Farm Life, its Conditions and Requirements."
Available any time.

MCMILLAN, ROBERT J., Seaforth. (S. Huron.):

"Underdraining," "Manuring," "Growing Corn for the Silo," "Feeding Cattle for the British Market," "Preparing the Soil for a Seed Bed." "Green Manuring," "Dairying." Evening subjects: "Farming as an Occupation," "Why Young Men Leave the Farm," "The Farmer as a Business Man."
Available after January 1st.

MCNISH, W. H., Lyn. (Brockville.):

"Breeding Dairy Stock," "Growing and Feeding Roots," "Raising Calves in Dairy Districts for Dairy Purposes," "Care and Training of Dairy Cows," "Breeding and Feeding Pigs for Market," "Making and Marketing Dairy Butter," "Suitable Crops for a Dairy Farm," "How to Make Farming More Profitable."
Available any time.

MCEWING, JAMES, Drayton. (W. Wellington.):

"Essentials to Successful Farming," "Underdraining," "Mistakes Made in Farming," "The Manufacture and Management of Fertilizers on the Farm," "Farm Implements and their Care." Evening subjects: "Defects in our Educational System," "Brain Culture as a Catch Crop on the Farm."

MCLAREN, P. S., McGarry. (Lanark.):

"How to Know the Dairy Cow," "Judging from Points," "Stocking a Farm," "Apple Growing in Eastern Ontario," "Farm Life, Retrospective and Prospective," "Agricultural Education," "Feeding Animals."
Available occasionally near home.

MCNEILL, A., Windsor. (Essex.):

"How and When to Spray for Insects and Fungous Disease," "Apple Culture," "Every Farmer his own Mason, or How to Use Concrete in Farm Structure," illustrated with plans, "Fruit Growing as a Speciality or with General Farming," "Underdraining," "The Education of the Farmer," "The Social Side of Farm Life." "Some Insect Friends and Foes," illustrated with chart and specimens, "The Ontario Agricultural College."
Available any time.

MCCRAE, DAVID, Guelph:

"Horse Breeding," "Cattle Feeding," "Rotation of Crops," "Sheep Breeding and the Wool Trade," "Clover Culture," "Our Best Grasses," "Rye and Rape." Evening subjects: "Country Homes," "Our Farm Life."
Available any time.

MACFIE, C. M., Appin. (Middlesex.):

"The Necessity for the Education of the Modern Farmer," "Science in Farming," "Silos and Ensilage," "Our Soiling Crops," "Underdrainage," "Dairying as a Factor in Advancing Soil Fertility."

Available from November 1st to April 1st.

MCNABB, MUNGO, Cowal. (Elgin.):

"Beef Production," "Sheep Breeding and Management," "Underdraining," "Corn Growing," "Country Roads." Evening subjects: "Fertility," "Boys on the Farm."

NICHOLSON, STEPHEN, Sylvan. (N. Middlesex.):

"Crumbs Swept Up," "The Ox from Birth to Block," "Applying Manure," "Soiling and Soiling Crops." Evening subjects: "Agricultural Education," "Plant Life."

Available after January 1st.

NICKLIN, CHAS., Ponsonby. (C. Wellington):

"Improving Impoverished Farms," "Make Country Homes Attractive," "Farming as a Calling," "Self Improvement," "What Shall we do with Our Farms?"

Available any time.

PANTON, J. HOYES, M.A., F.G.S., Professor of Natural History and Geology, O.A.C. Guelph:

"Water in Relation to Farm Crops," "Weeds," "Spraying—Why, When and How," Soil in Relation to Plants," "Nitrogen in Agriculture," "Insect Foes," "A Wheat Grain," "The Microscope in Agriculture." Evening subjects: "The Sun in Relation to Life," "Shifting the Landmarks in Agriculture," "How to Teach Science in Rural Schools," "The Origin and Formation of Soil."

PETTIT, M., Winona. (Wentworth):

"The Care of Nursery Stock," "Spraying," "Protection of Forests." Evening subjects: "Refining Influences of Horticulture."

PATTON, L., Oxford Mills. (Leeds N. and Grenville N.):

"Care of Milk for Butter and Cheese Factories," "Dairying as Compared with Other Branches of Farming from a Financial Standpoint," "Can Winter Dairying be made Profitable?" How to Divide Money Among Patrons of Cheese Factories Equitably," "Butter Making on the Farm," "The Importance of Fodder Crops in the Cheap Production of Butter and Cheese," "Selection and Care of Dairy Cattle," "Maintaining the Fertility of the Farm." Evening subjects: "Beautifying the Farm," "The Farmer of the Future," "The Value of Education to the Farmer."

Available from January 1st to the 24th, and from February 3rd until March 15th.

PEART, A. W., B.A., Burlington. (Halton):

"Apple and Grape Culture," "Underdraining," "Mixed Farming," "Fertilization of Fruit Blossoms," "Injurious Insects and Fungi, and How to Combat Them." Evening subjects: "Leaks on the Farm," "Agricultural Education."

Available during January and February.

PAYNE, STEWART R., Warsaw. (S. Peterborough):

"How the Babcock Test Works in Peterborough County," "Are your Cows Adding or Subtracting?" "The Future of the Dairy Business," "The Care of Milk for Cheese or Butter," "The Sphere of the Dairy Manager among his Patrons." Evening subjects: "Why Farmers should Read more," "How we Become Discouraged in Life," "How to make a Failure or Success of Life."

Available from January 1st to March 31st.

PETTIT, A. H., Grimsby:

"Spraying Experiments and the Results," "Fruit Growing in connection with the Farm." Evening subjects, "An Address Suitable to Locality," "The Ontario Agricultural College."

PATTULLO, ANDREW, M.P.P., Woodstock. (S. Oxford):

"Good Roads and the Canadian Farmer," "The Relation of Good Roads to Drainage," "Good Roads and Patriotism."

Available for a few days occasionally.

PAYNE, G. Y., Peterborough. (W. Peterborough):

"Breeding and Care of Hogs," "Ensilage and the Silo," "The Value of Clover," Science in Agriculture," "The Ontario Agricultural College."

Available any time.

POTTER, R. J., Mono Mills. (Cardwell):

"How to Make Co-operative Dairying Successful," "The Lines that Pay in General Farming," "How to Grow and Store Cheap Fodders," "The Silo, Method of Construction and Cost," "The Value of the Babcock Tester on the Farm."

PALMER, W. J., Toronto:

"Milk, its Characteristics, Peculiarities and General Use," "Our Local Markets and How to Supply Them," "Business Methods as Applied to Dairy Farming," "The Management of Home Dairies." Evening subjects: "The Present Outlook for Young Men," "Some Facts in City Life," "The Ontario Agricultural College."

Available any time.

REYNOLDS, J. B., B.A., Lecturer on English and Mathematics, O. A. C. College:

"Agricultural Physics," "Injurious Insects," "Farm Bookkeeping," "The Education Needed by the Farmers of this Province."

REED, Prof. J. H., Guelph:

"Breeding Horses for Profit," "The Laws of Breeding," "The Ordinary Diseases of the Stomach of the Ox, which a Farmer should Understand," "The Mare and her Foal," "Feeding Horses," "The Preventive of Parturient Apoplexy (commonly called milk fever) in Cows." Evening subjects: "The Education of the Horse," "The Essential Element of Contagious Diseases," "The Ontario Agricultural College."

RENNIE, WM., Farm Superintendent, O. A. C., Guelph:

"Clover Culture," "Culture of Field Roots," "Rotation of Crops," "Ridding the Land of Weeds," "Stock Feeding," "Beautifying the Farm."

RAYNOR, T. G., B.S.A., Rosehall. (Prince Edward):

"Selection and Cross-breeding of Animals," "Foods," "Our Fodder Crops," "The Dairy Cow," "Common Diseases of Domestic Animals," "Planting and Care of an Orchard," "Improving an Impoverished Farm," "Clover Culture," "Special Fertilizers," "Injurious Insects and Parasitic Plants on the Farm," "Swine Breeding and Feeding," "Management of Poultry," "The Pea Crop," "Corn Growing and the Silo," "Improvement of our Country Roads," "Underdraining." Evening subjects: "Tillage," "Farming as an Occupation," "Agricultural Education," "Ontario Agricultural College."
Available any time.

RENNIE, SIMPSON, Milliken. (York):

"Underdraining," "Cultivation Required for Potatoes and Field Roots," "Destruction of Weeds," "Buying and Feeding Cattle for the British Market," "Autumn Cultivation of the Soil," "Mistakes in Farming" Evening subjects: "Our Country, Past and Present," "Agriculture in Public Schools," "The Ontario Agricultural College."
Available any time.

ROBBINS, W. B., Nelson. (Halton):

"Rotation of Crops," "Hog Raising for Profit," "The Handling of Farm Products," Evening subjects: "The Farmer's Duties," "Character Building."
Available from January 15th to April 1st.

REYNOLDS, A. J., Danforth. (York):

"Silo and Ensilage," "Cultivation of the Soil," "Weeds," "Growing Clover," "Summer and Winter Dairying," "Farm Implements," "Farming, Past and Present," "Selection of a Home."
Available any time.

RICHARDSON, J. W., Caledonia. (Haldimand):

"Corn Growing and the Silo," "Dehorning and its Advantages," "The Farmer's Garden," "Encourage the Boys on the Farm."
Available any time.

RACE, T. H. Mitchell. (N. Perth):

"The Importance of the Orchard in Mixed Farming," "Mistakes and Humbugs in Horticulture that Should be Avoided." Evening subjects: "The History of Agriculture; an Ancient and Modern Industry," "The Farmer's Fruit Garden," "Home Surroundings," "Beautifying the Home and Making Farm Life Attractive," "Agricultural Education."
Available any time after January 15th.

RAWLINGS, ALBIN, Forest. (W. Lambton):

"Growing Corn," "Growing Clover and Grasses," "Root Growing," "How to Make Money Farming," "When to Buy Cattle and When to Sell Them," "Winter Care of Beef Cattle," "Summer Care of Beef Cattle."
Available January and February.

ROWAND, JAMES, Dumblane. (W. Bruce):

"Breeding and Raising Stock, Principally Cattle," "Production of Food for Feeding and Fattening Cattle," "General Farming."

SHUTTLEWORTH, A. E., B.A.Sc., Professor of Chemistry, O. A. C., Guelph:

"Maintaining Soil Fertility," "Wood ashes and their Use on the Farm," "The Production of a good quality of Hay," "Influence of Cultivation upon Soil Fertility," "A Farmer's Education," "The Ontario Agricultural College."

STANDISH, J., V.S., Walkerton. (Bruce):

"Breeding Horses," "The Common Diseases of the Foot of the Horse and How to Prevent Them," "Apoplexy. How to Prevent," "Azoturea, and How to Prevent it." Evening subjects: "Education of the Horse," "City *versus* Farm Life."
Available any time after January 15th.

SHEPLEY, J. C., Kingsville. (Essex):

"Tile Draining," "Proper Soil for Growing Corn," "Cultivation of Corn," "Cutting and Curing Hay," "Raising Hogs for Profit." Evening subjects: "Why our Boys Leave the Farm," "Education of Farmers' Children." "Life on the Farm."
Available January and February.

SWANSON, C. D., St. Marys. (Perth):

"Up to Date Dairying," "Silo Construction," "Growing Corn for the Silo," "Economical Feeding of Silage,"
Available any time.

SANGSTER, R. R., Lancaster. (Glengarry):

"The Growth of Roots," "Corn for Ensilage," "The Breeding of Pure-bred Stock, Cattle, Sheep, Swine, and Horses."

SHEPPARD, JAMES, Queenston. (Lincoln):

"Country Roads," "Grapes, Growing and Pruning," "The Care and Cultivation of Peaches," "Small Fruits for Home and Market," "The Cultivation of Tomatoes for Home and Market," "Propagating Fruits, Grafting, Budding, etc, Illustrated and Demonstrated," "Potato Culture." Evening subjects: "The Bicycle and the Agriculturist." "Agriculture in the Public Schools," "Four Reasons why we Till the Soil," "Window Gardening."
Available any time.

STEINHOFF, I. W., Stratford. (Perth):

"Selecting and Feeding Dairy Cows for Profit," "Advantages of Cheese and Butter-making as a Branch of Farming," "Confidence and Co-operation between Factory Managers and Patrons a Necessity," "Country Roads," "The Quality of Cheese made from Milk paid for according to Quality *versus* The Pooling System." "Boxing and Marketing Cheese," "Our Markets for Dairy Goods, and Our Competition," "The Flavor of Cheese where the Whey is Returned in the Cans *versus* where it is Fed at the Factory." Evening subjects: "Butter-making on the Farm and in the Factory," "The Important Work of Farmers' Wives and Daughters in Making and Maintaining the Reputation of our Dairy Goods and Canadian Homes," The Benefit of the Babcock Milk Tester in Cheese Factories and Private Dairies."

SMITH, D. E., B.A., Brampton. (Peel):

"The Feeding of Dairy Cattle," "Corn Cultivation, Ensilage, and the Silo," "Characteristics, Selection and Development of the Dairy Cow," "Essentials of Successful Breeding," "Construction, Convenience and Ventilation of Cow Stables," "Underdraining," "Butter Making." Evening subjects: "City *vs.* Country Life as an Educator," "How to Spend our Winter Evenings on the Farm."
Available at any time.

SMITH, J. L., Whitby. (S. Ontario):

"Mixed Farming," "Growing Clover for Feed and Seed."
Available any time.

SCOTT, THOS. B., Vanneck. (E. Middlesex):

"How to Keep Up the Fertility of the Soil." "Manures, Barn Yard and Commercial." "The Three Great Cleaning Crops, Clover, Wheat and Corn," "The Coming Hog," "Sixteen Years with a Silo."
Available any time.

SLEIGHTHOLM, J. A. B., B.S.A., Humber. (W. York):

"Stabling and Soiling Stock During the Summer Months," "Winter Care of Stock," "Breeding and Feeding Hogs," "Marketing Farm Butter," "Trees for the Farm, including Evergreens, Nut-bearing and Other Deciduous Varieties," "Cultivation of the Soil." Evening subjects: "The Worthiness of Our Calling."
Available any time.

SNELL, J. C., Snelgrove. (Peel):

"The Selection of a Breeding Flock," "Winter Care of Sheep," "Summer Care of Sheep," "How to Rear Large Lambs," "Rape Growing," "Mistakes Made in Breeding Animals," "How to Establish and Maintain a Herd."
Available any time.

SMITH, WM, M.P., Columbus. (S. Ontario):

"Breeding and Care of Heavy Horses," "Cultivation of Soil in Spring and Fall," "Elements of Success in Farming," "Breeding and Care of Sheep."
Available any time.

SMITH, A. M., St. Catharines. (Lincoln):

"How to Make Fruit Growing Profitable," "Growing Small Fruits," "Influence of Horticulture"
Available from December to March.

STEPHENSON, R. S., Ancaster. (N. Brant):

"Breeding and Rearing Dairy Cattle," "Feeding Dairy Cows," "Selecting Dairy Cows," "How to Choose a Bull for Service in a Dairy Herd."
Available any time.

SISSONS, JONATHAN, Barrie. (N. Simcoe):

"Breeding and Management of Farm Stock," "How I Made Money on a Farm," "Agricultural Depression, Its Cause and How It May Be Lessened." Evening subjects: "Home Training," "How to Improve the Farmer's Position," "Agricultural Education."
Available any time.

SLEIGHTHOLM, F. J., B.S.A., Humber. (W. York):

"The Babcock Milk Tester in the Farm Dairy," "A Dairy Herd, Its Breeding and Management," "Cattle Feeding," "Summer Feeding of Young Pigs," "Winter Feeding of Young Pigs." Evening subjects: "The Nobility of Agriculture."

SHEARER, W. C., Bright. (N. Oxford):

"The Experience of a Practical Dairyman," "Feeding Hogs," "The Value of Succulent Food for Live Stock," "How to Obtain a Profitable Dairy Herd," "The Best Varieties of Peas and Oats," "Experiments in Growing Roots," "Potato Growing."
Available for a day or two at a time at any period.

THOMPSON, J. D., Derwent. (S. Middlesex):

"Care of Farm Yard Manure," "Farm Fences," "Making Maple Sugar."
Available any time.

THOMPSON, GEO., Vyner. (W. Lambton):

"Farming as an Occupation," "The Farmer's Standing in Society," "The Advantages and Prospects of Dairying," "Large *versus* Small Farms," "The Care of Milk to be Sent to Cheese Factories."
Available December to April.

TOLTON, JAS., Walkerton. (E. Bruce):

"Mistakes in Sheep Breeding," "The Care of Breeding Ewes," "Preparing Cattle for the British Market," "Cultivation of Roots," "The Farmer's Orchard," "How to Make a Country Home Attractive."
Available December or January.

THOMPSON, R., St. Catharines. (Lincoln):

"Cultivation of the Soil," "How Cultivation Benefits the Growing Crop," "Cultivation of Fruit Trees and Small Fruits," "Gathering and Marketing Fruit," "City *versus* Country Life," "Root Growing," "Corn Growing," "Pea Growing," "Swine Breeding and Feeding," "Underdraining."
Available any time.

USHER, ISAAC, Thorold. (Welland):

"Building Cement Concrete Walls for Houses, Bank Stables, Silos, etc.," "Building Cement Concrete Floors for Horse Stables, Cow Stables, and Hog Pens and Troughs," "Improved Ventilation for All Kinds of Stables," "Concrete Bridges, Culverts, and Road Repairs," "Road Making."
Available any time.

WOOD, ELIAS, Agincourt. (E. York):

"How I Succeeded as a Farmer," "Care and Management of Live Stock," "The Importance of a Good Garden on a Farm."
Available any time.

WHITE, E. F., B.S.A., Richard's Landing. (St. Joseph Island):

"The Ontario Agricultural College," "The Farmer's Education," "Value of a Rotation of Farm Crops," "Small Fruits on the Farm," "Cultivation of the Soil," "The Evil Effect of Weeds," "Management of Live Stock."

WHEATLY, T. C., Blackwell. (W. Lambton):

"The Importance of Ridding Our Farms of Weeds, and How Best to Accomplish It" (illustrated), "Some of the Newer Weeds Threatening Us, and How to Prevent Them Spreading" (illustrated), "The Farmer's Vegetable Garden," "Farm Accounts, and How to Keep Them," "How to Beautify the Home," "The Ontario Agricultural College," "Our Native and Introduced Grasses, with Specimens" (illustrated).
Available any time.

WHEATON, J. W., B.A., Sec. Western Dairymen's Association, 361 Richmond street, London:

"The Necessity of Cold Storage Facilities for the Transportation of Perishable Food Products," "The Care of Milk for Cheese and Butter Making," "The Relation of the Patron to the Cheese Factory or Creamery," "The Value of Organized Effort in Agriculture," "The Importance of Suitable Buildings and Equipment for Cheese and Buttermaking." Evening subjects: "How to Educate the Young Men for the Farm."
Available occasionally.

WRIGHT, GEO., Elora. (C. Wellington):

"My Experience with the Silo and Ensilage," "Rotation of Crops," "Underdraining," "Agricultural Experiments," "Selection and change of Seed." Evening subjects; "Social Economy," "Value of Small Things," "Home Pleasures,"
Available any time.

WIDDIFIELD, J. W., Siloam. (N. Ontario):

"The Sources of Plant Food, and How We May Draw from Them," "Common Salt, Its Uses and Misuses on the Farm," "The Relation of Insect Life to Plant Life," "Principles to be Observed in Destroying Noxious Weeds," "The Economy of a Judicious Rotation," "The Assimilation of Atmospheric Nitrogen by Clover," "What We Feed For, or the Functions of Food in the Animal Economy," "The Animals that Constitute a Profitable Dairy Herd," "Feeding and Management of Young Animals Intended for the Dairy."
Available any time.

YUILL, JOS., Carleton Place. (S. Lanark):

"Fodder Corn and Silo," "Management of Dairy Cattle," "Profits of Winter Dairying," "Points of a Dairy Cow," "Care and Application of Manure," "How to Enrich an Impoverished Farm," "Sheep Husbandry," "Swine Breeding," "Underdraining." Evening subjects: "Butter Making," "What Should We Teach Our Sons and Daughters ?"
Available any time.

YUILL, A. K., Carleton Place. (S. Lanark):

"Care and Management of Dairy Cattle," "Corn and the Silo," "Care and Application of Manure," "Selection and Cross Breeding of Cattle," "Underdraining," "How to Restore an Impoverished Farm." Evening subjects: "The Ontario Agricultural College," "Butter Making," "How to Make Farm Life Attractive."
Available any time.

ZAVITZ, C. A., B.S.A., Experimentalist O.A.C., Guelph :]

"The Best Varieties of Grain Crops for Ontario Conditions," "Results of Experiments with Corn and Roots," "The Cultivation of Potatoes," "What the Farmer should Sow," "A Practical Method of Enriching the Farm," "Some of the Best Fodder Crops." Evening subjects: "The Ontario Agricultural College in Relation to the Farmer," "At Home on the Farm."

ZAVITZ, S. P., Coldstream. (S. Middlesex):

"Apple Culture," "The Proper Treatment of Our Old Orchards to Make Them Profitable," "How to Grow an Orchard," "Apple is King, What Varieties Shall We Raise?" "The Apple, Pruning, Spraying and Marketing," "The Silo and Its Product," "The Production of Wheat." Evening subjects: "The Development of Culture and Character in Our Country Houses," "How Shall We Utilize Our Winter Evenings," "This Canada of Ours."
Available December 1st to March 1st.

LADY SPEAKERS.

ROGERS (Mrs.), M. J., Kinsale. (S. Ontario):

"The Farmer's Home and Its Surroundings," "The Influence of Home Surroundings on Young People," "The Road to Success."
Available any time.

SMITH (Mrs.), J. L., Whitby. (S. Ontario):

"Farmers' Wives and Daughters, Their Duties, Delights and Discouragements," "Young Men on the Farm, Their Chances of Success."
Available any time.

DOMESTIC ECONOMY.

In addition to the meetings otherwise noted, Miss Bessie Livingstone, Superintendent of the School of Cookery, Ottawa, and Miss Mary E. Millar, a teacher in the same school, were employed to visit a number of districts throughout the Province. Meetings were addressed by one or the other of these ladies in twenty counties. These meetings were well attended and much appreciated by those present. Questions of domestic economy only, were introduced and discussed by these ladies. These were the first meetings held in Ontario under the auspices of the Farmers' Institute system, or under any branch of the Agricultural Department, where trained teachers of Domestic Economy were employed to deliver addresses. For some years ladies having similar training have been employed in like work in various states over the line. The venture in Ontario has been a pronounced success, and its continuance promises good results.

Where lady speakers are sent to address an Institute meeting on subjects of a purely household nature, a separate hall should be engaged in which the ladies may hold their meetings during the day, and in the evening a joint meeting may be held. Miss Livingstone and Miss Millar visited the following points during 1896, and discussed the subjects placed under their names respectively.

Miss B. Livingston, Superintendent School of Cookery, Ottawa:

"The Food Value of Milk and its Derivatives, Cooking of Milk, Cheese and Eggs," "A Practical Lesson on Invalid Coookery," "Diet for Children," "Cereal Food and Breakfast Dishes." "The Cookery of Vegetables," "Classes and Combinations of Food," "Hot Supper Dishes."

1.	Toledo	S. Leeds	February 7th
2.	Newboro'	S. Leeds	" 8th
3.	Emerald	Amherst Island	" 10th
4.	Stella	Amherst Island	" 11th
5.	Consecon	Prince Edward	" 12th
6.	Ameliasburg	Prince Edward	" 13th
7.	Wellington	Prince Edward	" 14th
8.	Bond Head	S. Simcoe	" 17th
9.	Crowland	Welland	" 18th
10.	Stephensville	Welland	" 19th
11.	North Pelham	Monck	" 20th
12.	Kohler	Haldimand	" 21st
13.	Bryanston	E. Middlesex	" 22nd
14.	Harrietsville	E. Middlesex	" 24th

Miss Millar, School of Cookery, Ottawa:

"The Farm Kitchen," "The Five Food Principles and the Purposes they Serve in the Body,' demonstration lectures: "The Dietetic Value of Milk and Cheese," with illustrations of cooking them, "The Medicinal Properties of Fruits, and Dainty Ways of Serving Them." "Starchy Foods," examples, puddings and breakfast dishes, "The Economical Cookery of Meats," "The School Children's Lunch Basket."

1.	Almonte	N. Lanark	December 11th
2.	Pakenham	N. Lanark	" 12th
3.	Harrowsmith	Frontenac	January 7th
4.	Kingston	Frontenac	" 8th
5.	Martintown	Glengarry	February 17th
6.	Maxville	Glengarry	" 18th
7.	Carleton Place	N. Lanark	" 27th
8.	Finch	Stormont	March 3rd
9.	Cornwall	Cornwall	" 4th
10.	Lyn	Brockville	" 5th
11.	Mallorytown	Brockville	" 6th

Conclusion.

Ever since my appointment my best efforts have been put forth and much of my time given to organizing, simplifying, and establishing the Institute system. The work is now accomplished. Rules and regulations have been compiled and revised; new Institutes have been organized; Institute districts have been re-arranged, that the work of the local Institutes may be more thoroughly and easily done; and a complete set of books, consisting of four volumes, has been prepared for the use of each local Institute. These books greatly lessen the work of the local officers, and also provide such uniformity and system that the expenses of my office are considerably reduced. Good work has been done each year since Institutes were established in Ontario, but better work at less cost will be the aim of the future. With this end in view, I confidently request the hearty co-operation of each person interested in agriculture and in the welfare of the farmer.

F. W. HODSON.

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REPORTS OF LOCAL FARMERS' INSTITUTES

Institute District.	Membership, December, 1895.	Membership to June, 1896.	No. of meetings held.	Total attendance.	No. of papers read or addresses delivered.	Receipts.					
						Cash on hand per last report.	Members' fees.	Donations.	Grants.	Receipts from conventions.	Receipts from excursions.
						$ c.	$ c.	$ c.	$ c.	$ c.	$ c.
Addington	50	59	5	238	18	21 37	14 75	.....	50 00	.....	.....
Algoma, Centre	84	92	4	153	10	11 75	21 75	.....	50 00	.....	.....
Algoma, East	107	74	6	513	11	60	18 50	.....	25 00	.....	.....
Amherst Island	53	63	7	1,617	23	8 50	14 25	.....	50 00	.....	.....
Brant, North	70	73	7	1,017	22	27	18 00	.....	50 00	....	.....
Brant, South	56	52	6	256	22	14 62	13 00	.....	50 00	.....	.....
Brockville	112	141	8	1,701	32	25 02	34 25	.....	25 00	.....	.....
Bruce, Centre	53	130	5	1,170	17	31 14	32 50	.....	.....	.....	.....
Bruce, North	154	181	6	1,283	22	110 72	44 75	.....	25 00	.....	...
Bruce, South	114	71	5	963	13	163 87	14 00	.....	50 00	.....	.....
Carleton	85	58	7	956	20	27 60	22 25	.....	75 00	.....	.....
Cornwall	58	79	5	950	18	12 75	18 75	12 50	37 50	.....	.....
Dufferin	62	60	6	250	18	125 17	28 25	.....	100 00	....	.....
Dundas	182	230	6	1,704	34	2 25	57 00	.....	50 00	.....	.....
Durham, East	150	156	5	318	10	.....	39 00	.....	50 00	.....	.....
Durham, West	80	99	5	258	8	69 24	22 25	....	50 00	.....	.....
Elgin, East	81	158	8	823	20	29 50	39 00	.....	25 00	.....	.....
Elgin, West	91	135	6	619	20	6 60	47 50	.....	50 00	.....	.....
Essex, North	66	55	5	640	29	87 71	13 25	....	25 00	.....	.....
Essex, South	55	98	6	1,187	29	124 54	25 00	.....	50 00	.....	.....
Frontenac	122	91	6	591	14	36 89	24 50	38 50	50 00	.....	.....
Glengarry	120	208	8	2,300	30	6 76	52 00	50	25 00	.....	.....
Grenville, South	97	92	6	1,055	20	41 04	21 75	.....	75 00	.....	.....
Grey, Centre	117	140	7	804	39	46 21	63 75	.....	50 00	....	.....
Grey, North	101	282	11	1,696	57	37 51	69 50	.....	50 00	.....	.....
Grey, South	122	165	4	1,268	15	133 87	26 55	.....	50 00	.....	.....
Huron, East	109	185	7	1,400	29	135 19	46 00	.....	50 00	.....	.....
Huron, West	84	128	4	550	9	141 70	27 25	.....	49 85	.....	.....
Huron, South	187	145	6	922	23	40 19	36 25	.....	.....	.....	.....
Haldimand	88	115	5	1,060	33	68 90	25 50	.....	50 00	.....	.....
Hastings, East	159	123	6	950	17	25 37	30 25	.....	50 00	.....	.....
Hastings, West	68	97	5	545	18	5 00	23 50	.....	50 00	.....	.....
Hastings, North	158	273	22	1,290	81	8 70	66 50	.....	50 00	.....	.....
Halton	201	211	6	1,515	27	111 11	50 25	.....	50 00	.....	.....
Kent, East	151	278	7	935	31	3 13	54 00	.....	50 00	.....	.....
Kent, West	137	140	5	375	18	92 99	34 75	.....	50 00	.....	.....
Lanark, South	142	178	7	1,275	56	13 20	41 50	.....	65 00	....	1 00
Lanark, North	339	348	8	3,915	45	10 47	40 50	.....	55 00	.....	.....
Leeds, South	168	179	6	2,125	19	11 93	42 50	.....	50 00	....	.....
Leeds, N., and Grenville, N.	108	111	7	1,185	35	75 15	27 50	.....	50 00	.....	...
Lambton, East	200	138	15	590	18	5 70	41 25	....	50 00	.....	....
Lambton, West	469	202	10	805	54	.....	57 25	.....	25 00	.....	.....
Lennox	77	59	7	555	10	60 62	14 50	.....	75 00	.....	.....
Lincoln	108	112	5	1,115	25	40 15	.....	.....	30 00	.....	.....
Manitoulin, East	86	74	6	530	12	11 50	18 50	.....	25 00	.....	.....
*Manitoulin, West	133	37	6	332	17	.....	.....	.....	.....	.....	.....
Monck	115	108	5	818	20	88 02	27 00	.....	55 00	.....	.....
Middlesex, East	103	251	12	2,900	64	87 50	25 75	.....	25 00	....	44 00
†Middlesex, North	172	285	9	2,475	64	80 34	.....	....	50 00	.....	.....
Middlesex, West	168	218	6	2,125	31	92 09	54 25	.....	50 00	.....	.....
Muskoka	90	86	7	217	9	53 40	10 25	.....	25 00	.....	.....
‡Port Carling	33	38	2	241	10	7 51	12 75	.....	.....	.....	.....
‡Stephenson	25	81	7	217	8	.....	10 00	.....	.....	.....	.....

* Complete report not furnished before June 20th, 1896. † Financial

FOR YEAR ENDING JUNE 30TH, 1896.

Receipts.—*Con.*			Expenditure.												
Miscellaneous.	Balance due treasurer.	Total receipts.	Due treasurer per last report.	Expense for meetings.	Secretary's salary, etc.	Postage and stationery.	Printing.	Advertising.	Lecturers' expenses.	Lecturers' allowance.	Periodicals for members.	Miscellaneous.	Balance on hand.	Total.
$ c.	$ c.	$ c.	$ c.	$ c.	$ c.	$ c.	$ c.	$ c.	$ c.	$ c.	$ c.	$ c.	$ c.	$ c.
25 00	.....	86 12	.....	5 00	20 00	4 44	5 50	2 00	.....	.....	.....	21 40	27 78	86 12
25 00	.....	108 50	.....	6 00	.....	50	5 00	.....	.....	.....	.....	75	96 25	108 50
.....	.....	44 10	.....	18 50	.....	16	2 50	25	.....	.....	.....	7 00	15 69	44 10
.....	.....	72 75	.....	2 00	.....	1 35	3 08	.....	1 85	.....	.....	57 20	7 27	72 75
.....	.....	68 27	.....	41 60	.....	6 50	17 00	2 90	.....	.....	.....	.....	27	68 27
.....	.....	77 62	.....	19 29	.....	3 83	12 25	4 25	.....	.....	.....	5 00	33 00	77 62
.....	.....	84 27	.....	15 00	.....	4 50	10 75	28 15	24 10	24 10	.....	.....	1 77	84 27
50	.....	64 14	.....	16 30	6 00	1 00	15 12	.....	3 50	.....	.....	2 25	19 97	64 14
.....	.....	180 47	.....	9 80	26 75	2 43	18 11	.....	16 45	.....	.....	3 09	103 84	180 47
.....	.....	227 87	.....	5 00	50 00	5 48	14 35	.....	5 35	.....	.....	42 30	105 39	227 87
.....	.....	124 85	.....	5 00	74 50	5 53	17 53	.....	.....	.....	.....	4 40	21 89	124 85
.....	.....	81 50	.....	.....	25 00	3 25	13 30	2 50	18 25	.....	.....	.....	19 20	81 50
.....	.....	253 42	.....	23 00	39 50	7 78	31 30	.....	6 10	.....	.....	8 00	137 74	253 42
.....	.....	109 25	.....	2 00	28 00	5 27	.....	25 50	9 75	.....	.....	1 55	37 18	109 25
.....	.....	89 00	.....	9 00	12 50	5 50	18 50	.....	.....	.....	.....	.....	43 50	89 00
.....	.....	141 49	.....	1 55	10 00	3 00	35 70	.....	6 00	.....	.....	40	87 84	141 49
.....	.....	93 50	.....	26 75	.....	2 33	2 35	.....	8 75	.....	.....	7 88	45 44	93 50
.....	.....	104 10	.....	10 00	.....	12 14	35 70	.....	10 35	.....	.....	21 20	14 71	104 10
.....	.....	125 96	.....	8 00	15 00	8 70	14 25	.....	4 50	14 11	.....	28 30	33 10	125 96
.....	.....	199 54	.....	.....	10 00	7 50	8 75	.....	4 50	.....	.....	22 40	146 39	199 54
150 00	.....	299 89	.....	.....	29 30	4 50	37 85	.....	.....	.....	.....	211 10	17 14	299 89
.....	14 35	98 61	.....	54 55	25 00	2 00	.....	17 06	.....	.....	.....	.....	.....	98 61
.....	.....	137 79	.....	9 00	10 00	3 46	22 00	.....	9 35	.....	.....	8 30	75 68	137 79
2 00	.....	161 96	.....	46 47	16 16	7 23	20 60	1 00	.....	.....	.....	27 25	42 75	161 96
1 66	.....	158 67	.....	38 00	23 95	.....	33 70	.....	.....	.....	.....	5 00	58 02	158 67
.....	.....	210 42	.....	28 45	15 00	1 06	7 75	.....	.....	.....	7 30	.....	150 86	210 42
.....	.....	231 19	.....	14 19	20 00	6 00	.....	21 00	25 55	.....	.....	30	143 44	231 19
.....	.....	218 80	.....	21 50	18 00	11 60	23 25	.....	.....	.....	.....	45	144 00	218 80
.....	.....	76 44	.....	11 35	.....	3 15	16 10	.....	19 70	.....	.....	40	25 74	76 44
.....	.....	144 40	.....	16 50	20 00	12 93	18 50	.....	6 90	.....	.....	.....	69 57	144 40
.....	.....	105 62	.....	22 00	25 00	12 44	20 90	4 25	.....	.....	.....	2 45	18 58	105 62
.....	.....	78 50	.....	14 25	15 00	1 54	.....	9 33	4 40	.....	.....	.....	33 98	78 50
.....	.....	125 20	.....	7 50	.....	11 21	22 58	.....	44 70	.....	.....	5 65	33 56	125 20
6 58	.....	217 94	.....	32 70	15 00	4 12	.....	23 75	7 75	.....	6 00	17 65	110 97	217 94
.....	.....	107 13	.....	14 00	20 00	21 85	5 00	19 00	15 15	.....	.....	1 25	10 88	107 13
.....	.....	177 74	.....	2 40	10 00	4 82	13 40	17 10	.....	.....	.....	20 00	110 02	177 74
.....	.....	120 70	.....	41 70	10 00	1 50	36 23	.....	11 25	5 50	.....	.....	14 52	120 70
.....	62 02	167 99	.....	48 10	42 60	3 34	34 50	28 35	.....	10 25	.....	85	.....	167 99
.....	3 92	108 35	.....	37 05	.....	9 80	16 50	.....	.....	.....	.....	45 00	.....	108 35
.....	.....	152 65	.....	18 10	.....	4 50	10 75	7 00	14 00	.....	.....	42 00	56 30	152 65
.....	.....	96 95	.....	12 25	25 05	6 75	10 75	.....	4 05	.....	.....	35	37 75	96 95
16 40	26 49	125 14	.....	67 05	10 00	7 25	19 50	9 00	.....	.....	.....	12 34	.....	125 14
.....	.....	150 12	.....	3 00	10 00	.....	8 95	.....	24 00	.....	.....	21 00	83 17	150 12
.....	.....	70 15	.....	5 00	.....	6 70	7 75	.....	11 60	.....	.....	9 60	29 50	70 15
.....	.....	55 00	.....	6 00	.....	1 50	7 00	.....	.....	.....	.....	.....	40 50	55 00
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
.....	.....	170 02	.....	25 19	36 50	5 00	11 00	7 55	8 00	.....	.....	.....	76 78	170 02
.....	.....	182 25	.....	24 00	25 00	6 53	15 75	11 13	16 80	.....	.....	10 95	72 09	182 25
30 31	.....	160 65	.....	.....	4 00	1 50	.....	.....	.....	.....	.....	.....	155 15	160 65
.....	.....	196 34	.....	35 15	34 00	1 11	7 25	.....	9 40	.....	.....	12 85	96 58	196 34
.....	.....	88 65	.....	.....	10 00	1 84	12 00	2 25	.....	.....	.....	13 95	48 61	88 65
.....	.....	20 26	.....	2 75	.....	2 36	3 00	.....	4 00	.....	.....	.....	8 15	20 26
2 25	.....	12 25	.....	2 00	1 70	1 51	2 00	.....	.....	.....	.....	.....	5 04	12 25

statement to December 31st, 1895. ‡ Branch institute of Muskoka.

REPORTS OF LOCAL FARMERS' INSTITUTES

Institute District.	Membership, December, 1895.	Membership to June, 1896.	No. of meetings held.	Total attendance.	No. of papers read or addresses delivered.	Receipts.					
						Cash on hand per last report.	Members' fees.	Donations.	Grants.	Receipts from conventions.	Receipts from excursions.
						$ c.	$ c.	$ c.	$ c.	$ c.	$ c.
†Stisted	35	50	5	230	12	.....	11 00	.....	.....	.....	.....
Norfolk, North	188	220	6	1,675	51	40 36	53 50	.....	50 00	.....	.....
Norfolk, South	96	120	7	410	24	45 56	29 75	.....	25 00	.....	...
Northumberland, East	144	159	7	2,435	37	.. ..	40 00	.....	50 00	132 40	.....
Northumberland, West	120	85	6	920	11	42 23	20 25	.....	50 00	.....	.....
Ontario, North	203	214	9	1,700	26	110 42	52 75	.....	50 00	.....	.....
Ontario, South	215	269	10	940	59	.....	67 50	.. ..	50 00	.....	.....
Oxford, North	76	62	7	820	36	50 09	17 25	.....	50 00	.....	.....
Oxford, South	82	157	7	1,030	33	90 92	36 25	.....	50 00	.....	.....
Parry Sound, East	78	76	6	352	19	50 73	19 00	.....	30 00	.....	.....
Parry Sound, West	172	101	9	465	66	.....	25 25	.....	25 00	.....	.....
Peel	55	115	5	491	10	127 45	27 75	.....	24 85	.....	.....
Perth, North	125	123	10	2,750	50	7 66	30 25	.....	50 00	.....	.....
Perth, South	170	106	7	1,860	27	....	62 75	.....	50 00	.....	.....
Peterborough, East	119	124	6	1,125	21	95	21 00	.....	50 00	.....	.....
Peterborough, West	127	103	6	855	28	51 82	27 00	.....	50 00	.....	.....
Prescott	99	95	4	1,125	35	.....	19 50	.....	50 00	.....	.....
Prince Edward	109	248	9	1,380	20	54 80	.....	.....	50 00	.....	114 05
Renfrew, North	176	114	5	925	9	36 21	29 25	.....	50 00	.....	.....
Renfrew, South	105	94	7	1,280	24	68 07	22 00	.....	50 00	.....	.....
Russell	80	105	7	760	10	89 69	29 00	... ..	75 00	.....	.....
Simcoe, Centre	50	100	6	390	20	45 60	22 50	.....	50 00	.....	.....
Simcoe, East	99	188	18	3,014	62	7 09	24 50	.....	50 00	.....	.... .
Simcoe, South	93	107	7	1,065	35	45 80	26 25	.....	50 00	.....	.....
Simcoe, West	133	168	13	560	21	.....	27 75	5 00	50 00	1 44	.....
Stormont	76	80	5	970	16	.....	21 00	.....	50 00	.....	.....
St. Joseph Island	63	38	6	963	16	63 92	14 75	.....	50 00	.....	.....
Victoria, East	79	102	8	2,083	36	21 06	19 75	.....	50 00	.....	.....
Victoria, West	85	120	6	980	36	66 36	48 80	.....	50 00	.....	. ....
‡Waterloo, North	31	51	4	473	10	.....	.....	.....	.....	.....	.....
Waterloo, South	165	281	10	2,313	72	2 00	70 50	.....	50 00	.....	.....
Welland	143	104	7	765	81	105 31	26 75	.....	50 00	.....	.....
Wellington, Centre	111	147	7	1,500	30	51 28	26 75	.....	50 00	.....	.....
Wellington, East	73	84	7	950	38	1 80	18 25	.....	50 00	.....	.....
Wellington, South	112	155	8	705	16	45 02	26 00	10 00	50 00	.....	.....
Wellington, West	70	117	6	1,860	29	63 56	38 00	.....	50 00	... .	.....
**Union	24	55	4	670	13	12 49	14 50	.....	.....	.....	.....
Wentworth, North	115	121	6	955	25	24 79	30 50	.....	50 00	.....	.....
Wentworth, South	125	178	7	1,322	50	100 20	50 00	.....	50 00	.....	.....
York, East	104	78	17	589	25	100 73	31 50	.....	75 00	.....	71 95
York, North	69	69	6	1,119	21	13 38	16 75	.....	50 00	.....	.....
York, West	105	119	6	395	23	56 43	22 00	.....	50 00	.....	.....
Totals	10,819	12,384	666	102,461	2,637	.....	.....	.....	.....	.....	.....

† Branch institute of Muskoka. ‡ Institute irregularly conducted. Old institute

FOR YEAR ENDING JUNE 30TH, 1896.—*Concluded.*

Receipts.—*Con.*			Expenditure.											
Miscellaneous.	Balance due treasurer.	Total receipts.	Due treasurer per last report.	Expense for meetings.	Secretary's salary, etc.	Postage and stationery.	Printing.	Advertising.	Lecturers' expenses.	Lecturers' allowance.	Periodicals for members.	Miscellaneous.	Balance on hand.	Total.
$ c.	$ c.	$ c.	$ c.	$ c.	$ c.	$ c.	$ c.	$ c.	$ c.	$ c.	$ c.	$ c.	$ c.	$ c.
.....	.....	11 00	.....	3 25	.....	2 84	1 50	.....	.....	.....	.....	.....	3 41	11 00
.....	.....	143 86	.....	12 75	25 00	9 10	11 25	.....	7 50	10 50	.....	.....	67 76	143 86
.....	.....	95 31	.....	6 00	50 70	80	6 00	3 00	8 50	.....	.....	4 60	15 71	95 31
11 00	.....	233 40	22 56	39 50	15 00	5 50	22 25	....	8 65	.....	.....	88 95	30 99	233 40
1 00	.....	113 48	.....	26 00	18 00	3 85	8 50	1 30	5 15	.....	.....	.....	50 68	113 48
5 00	.....	218 17	.....	20 75	6 00	13 91	35 86	.....	77 95	30 00	.....	10 00	23 70	218 17
.....	.....	117 50	2 17	18 25	.....	11 07	8 75	21 50	35 50	.....	.....	60	19 66	117 50
.....	....	117 34	.....	5 00	20 00	85	7 30	16 35	.....	.....	.....	20 00	47 84	117 34
3 75	.....	180 92	.....	22 00	20 00	1 95	24 00	.....	16 20	.....	.....	.....	96 77	180 92
.....	.....	99 73	.....	33 90	15 00	2 45	6 50	.....	.....	.....	.....	1 35	40 53	99 73
6 00	.....	56 25	3 97	24 20	10 53	6 80	10 75	.....	.....	.....	.....	.....	.....	56 25
30	.....	180 35	.....	10 00	10 00	1 29	5 00	11 00	.....	.....	.....	25	142 81	180 35
.....	.....	87 91	.....	17 35	10 00	5 64	.....	42 20	.....	5 25	.....	30	7 17	87 91
57 90	.....	170 65	3 25	43 20	10 00	5 75	18 25	3 00	16 90	.....	.....	70 05	25	170 65
5 26	25 90	103 11	.....	25 70	20 00	2 90	34 25	.....	.....	.....	.....	20 26	.....	103 11
.....	.....	128 82	.....	5 00	25 00	55	42 47	.....	.....	.....	.....	5 75	50 05	128 82
.....	.....	69 50	3 68	.....	40 00	2 94	11 50	3 50	65	.....	.....	1 15	6 08	69 50
.....	.....	218 85	.....	.....	.....	2 12	50 87	.....	.....	.....	.....	1 80	164 06	218 85
.....	.....	115 46	....	.....	.....	2 30	62 90	.....	29 30	.....	.....	7 65	13 31	115 46
.....	....	140 07	.....	16 00	.....	92	7 50	21 25	.....	.....	.....	90	93 50	140 07
.....	.....	193 69	.....	18 50	66 00	4 80	2 80	40 32	16 25	.....	.....	.....	45 02	193 69
.....	.....	118 10	.....	18 00	25 50	4 00	18 65	.....	16 45	.....	.....	70	34 80	118 10
.....	.....	81 59	.....	8 45	10 00	4 00	32 62	.....	10 75	.....	.....	.....	15 77	81 59
.....	.....	122 05	.....	16 00	.....	8 32	21 96	.....	25 55	.....	.....	1 35	48 87	122 05
.....	14 39	98 58	17 63	28 99	.....	7 80	21 25	.....	5 10	.....	.....	17 81	.....	98 58
.....	11 45	82 45	2 45	17 95	20 00	4 00	11 30	4 50	22 25	.....	.....	.....	.....	82 45
9 64	.....	138 31	.....	5 00	10 00	3 30	19 00	.....	3 00	.....	14 10	75	83 16	138 31
.....	3 56	94 37	.....	20 00	21 15	3 82	13 00	3 25	32 65	.....	.....	50	.....	94 37
.....	.....	165 16	.....	11 30	20 00	6 11	15 25	.....	5 25	13 40	29 65	.....	64 20	165 16
.....	....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
.....	.....	122 50	.....	18 00	20 00	7 87	20 25	7 00	8 00	.....	.....	26 30	15 08	122 50
.....	.....	182 06	.....	27 10	15 00	3 50	.....	7 90	21 55	.....	.....	50	106 51	182 06
.....	.....	128 03	.....	22 60	25 00	2 33	.....	7 70	....	.....	.....	18 15	52 25	128 03
.....	.....	70 05	.....	2 00	10 00	1 30	8 00	3 75	15 00	.....	.....	4 00	26 00	70 05
43 00	.....	174 02	.....	10 00	30 00	7 01	16 00	20 82	6 10	.....	.....	69 85	14 24	174 02
.....	.....	151 56	.....	17 05	8 00	11 33	13 25	.....	9 75	.....	40 00	40	51 78	151 56
.....	.....	26 99	.....	6 75	.....	4 06	9 30	.....	3 75	.....	.....	2 75	38	26 99
.....	.....	105 29	.....	8 35	15 00	12 38	20 25	8 00	15 90	.....	.....	8 00	17 41	105 29
.....	.....	200 20	.....	44 50	5 00	8 15	26 00	20 00	12 00	.....	.....	.....	84 55	200 20
.....	.....	279 18	.....	20 50	20 00	14 84	.....	23 75	.....	.....	.....	36 80	163 29	279 18
.....	....	80 13	.....	5 00	2 17	.....	9 75	.....	10 00	.....	16 40	9 50	27 31	80 13
.....	.....	128 43	.....	18 00	37 50	5 45	31 45	.....	9 15	.....	.....	5 75	21 13	128 43
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....

suspended and a new one organized. ** Branch institute of West Wellington.

APPENDIX.

SELECTED PAPERS READ AT MEETINGS OF INSTITUTES.

EDUCATIONAL DEPARTMENT.

THE ONTARIO AGRICULTURAL COLLEGE, GUELPH, ONTARIO.

The following short article is intended for farmers. It indicates in a general way the character of our work and equipment, the very small cost of our course of study, and its special adaptability to the wants of those who intend to follow agricultural pursuits.

I want those who see these introductory words to read carefully the following paragraphs and think over what is said therein, remembering that our aim is to educate young men for work and life on the farm.

Staff of Instructors.

James Mills, M.A., LL.D	President.
J. Hoyes Panton, M.A., F.G.S	Biology and Geology.
A. E. Shuttleworth, B.A.Sc	Chemistry.
J. H. Reed, V.S	Veterinary Science.
H. H. Dean, B.S.A	Dairy Husbandry.
William Rennie	Farm Management.
C. A. Zavitz, B.S.A	Field Experiments.
G. E. Day, B.S.A	Agriculture and Live Stock.
H. L. Hutt, B.S.A	Horticulture.
F. C. Harrison, B.S.A	Bacteriology.
J. B. Reynolds, B.A	English and Mathematics.
R. Harcourt, B.S.A	Assistant in Chemistry.
L. G. Jarvis	Poultry.
R. F. Holtermann	Apiculture.
Capt. W. Clarke	Drill and Gymnastics.

Course of Instruction and Apprenticeship.

Full courses of lectures with practical instruction in class-rooms, laboratories, stables, yards and fields,—in agriculture, live stock and dairying; horticulture; veterinary science and practice; English grammar, literature and composition; bookkeeping; and those branches of natural science and mathematics which have a direct bearing on the work of the agriculturist, such as chemistry, geology, botany, the study of insects, arithmetic, mensuration, etc.

The forenoon of each day, except Saturday, from 8.30 to 11.45 ($3\frac{1}{4}$ hours), is devoted to lectures and practical instruction in the above subjects. In the afternoon, all first and second year students are sent alternately to work in the outside departments—in the fields, among the live stock, in the dairy, in the poultry department, in the carpenter shop, in the garden or greenhouses and in the experimental department.

Terms of Admission.

Students are admitted on the 1st October and 4th April. Applicants for admission should be sixteen years of age. The subjects of examination for entrance are:

(1) Reading, writing and dictation.

(2) English grammar—parsing and analysis.

(3) Arithmetic—to the end of simple proportion.

(4) The outlines of general geography and the geography of Canada.

Candidates who pass in these subjects are admitted to the first year. Those who cannot do so are placed in the preparatory department.

Students in the preparatory department take the same subjects as those in the first year; but they proceed less rapidly, and devote more time to elementary English and arithmetic.

Cost.

The net cost for board, washing and tuition to an Ontario farmer's son is from $50 to $65 a year. If he get the county nomination for free tuition, his net outlay for these items need not exceed $40 a year; and the vacations are arranged so that students can be at home on their own farms for part of haying, the whole of harvest and fall seeding, and a considerable portion of the fall plowing—from the 1st July to 1st October.

By this arrangement farmers' sons can get an education at very small cost, and with the least possible interference with the work at home.

Equipment for Work.

In the class-room, in the laboratories and on the farm our equipment for work and practical instruction is all that can be desired.

Our farm is in good shape, well tilled and well managed. We have nine breeds of cattle, nine breeds of sheep and five breeds of swine, for instruction in the live stock department; twenty-five varieties of hens, to illustrate lectures on poultry; all necessary appliances for the broadest and most thorough training in milk-testing, butter-making and cheese-making; a carpenter shop, in which students are taught the use of tools; a fine set of greenhouses and a botanical laboratory, for practical work in botany and horticulture; bees, for lectures on apiculture; a special room, for practical operations and demonstrations in veterinary science; fifty acres of land divided into nearly 1,800 plots, for field experiments with grain, grasses, clovers, corn, roots, potatoes, etc.; also a large library and a reading room, well furnished with books and papers for the use of students.

Kind of Education.

The education given at our College is exactly what farmers need. It is thoroughly practical. It includes the subjects which they require and nothing more.

Give Your Sons an Equal Chance.

You are now giving one or two of them an education that they may enter some trade or profession; and you are keeping another at home to look after the farm. This third boy will get most of your land with little or no education; which means that, in spite of himself, he will be a hewer of wood and a drawer of water for those who get the education. Is this fair? Do something towards giving this other an education. It is better to leave him ten acres less land and give him such an education as will enable him to hold his own among his educated brothers and other professional men. Send him for a year or two to the Ontario Agricultural College, Guelph, where he will get precisely the kind of education which he needs at the least possible cost; where he will acquire a liking for farm work and farm life, and will receive an inspiration that will brighten his life and make him a much more intelligent and successful worker.

Course in Dairying.

If you cannot let your son come long enough to take the regular course of two years as outlined in this circular, send him, or some of your daughters, for the dairy course, which commences on the 16th January and lasts for two and one-half months. In this course they can learn milk-testing, butter-making and cheese-making, or any one of these branches of dairy work.

Short Special Courses.

If the foregoing suggestions do not meet with your approval, please take note of the fact that any person—man, woman, boy or girl—may come to the College at any time for special instruction and practical work in one or more branches, say in poultry, or horticulture, or greenhouse work, or dairying, or two or three of these or other branches.

There is no entrance examination for the dairy, or for any of the short special courses.

Send to the President of the College for a copy of the College circular.

James Mills,
President.

Ontario Agricultural College,
Guelph, June, 1896.

THE COST OF A FULL COURSE AT THE ONTARIO AGRICULTURAL COLLEGE.

By Judson F. Clark, Bay View, P. E. Island.

I have been asked to state what I think of the Ontario Agricultural College as a place for the education of boys who have been bred on the farm, and who intend to follow agriculture or horticulture as their lifework; and I have thought that perhaps I cannot do this better than by giving you my own experience at the College. Like most farmers' boys I was brought up on a very busy farm, "Kirklawn," Bay View, Prince Edward Island; and as in the case of most eldest sons, my attendance at the public school was very irregular, and practically ceased at fifteen. Indeed, at that age, I greatly preferred driving a team to studying grammar. A few years later I discovered my mistake, and wished in vain for opportunity to remedy it. My twenty-third summer, however, found me slowly recovering from a severe attack of typhoid fever, and being unable to do my usual share of the work, I decided to take a year's course at the O. A. C. I found the College well suited to my needs. It suited me, first, because there were no hard entrance examinations to pass. Like many other boys from the farm, I had during my seven years' absence from school, forgotten nearly everything I had ever learned about grammar, arithmetic, and kindred subjects, and could have passed no examination in them. There are entrance examinations in these subjects, and every student coming in should be able to pass them. Should he fail, however, he is not refused admission, but placed in the preparatory department, from which he may be transferred to the first year at any time, if his progress warrants it; otherwise he completes the year in the preparatory department, and matriculates into the first year at the close of the term. The authorities have decided to refuse admission to no one who is of sufficient age and can produce satisfactory certificates as to moral character, physical health and strength, and intention to follow agriculture or horticulture as an occupation. This rule has been adopted in view of the difficulties that many farmers' sons have to contend with in getting their elementary education, and the fact that many of the best students the College has ever had, were boys whose early education was sadly neglected. The College suited me, secondly, because of the course of instruction offered, so much so indeed that at the completion of my first year I determined to take a full course. Like most farmers, I had more or less contempt for theoretical farming. I wanted nothing but the practical. I found the studies at the College *eminently practical*, but I also found that theory had a place even in farming. I learned that practice without an intelligent knowledge of the why and the wherefore, was as one-sided as a theoretical knowledge without the ability to put that knowledge into practice. In a word, I learned that for the best results in farming, theory and practice must go hand in hand. This happy combination of theory and practice has been the guiding principle in the management of the course of study.

Let us glance at the instruction in live stock, for example. In the class-room the students are taught the characteristics of the various breeds, the laws of breeding, the pedigree system, the rearing of young stock, the principles of feeding, etc. They are also taught the qualities that should characterize a steer for feeding purposes, a cow for the dairy, or any animal for stock purposes. This class-room work is supplemented by practical work in the stables, in feeding, caring for and judging the animals. For this purpose the College keeps fair samples, male and female, of nine breeds of cattle, nine breeds of sheep and five breeds of swine. The practical work includes a thorough training in the characteristic features of these breeds and the distinguishing qualities of animals kept for different purposes. This union of the theoretical and the practical is followed in arranging the courses in agriculture, dairying, horticulture, poultry, etc., but space forbids details.

Such natural sciences as are intimately connected with agriculture are included in the course, and their bearing on the work of the farmer is especially emphasized. Special laboratories, fitted with the most modern appliances, have been provided for the study of chemistry, botany, physics, zoology and bacteriology. Then, too, those boys who have had little opportunity to study the subjects that they should have mastered in the public school, are given another chance. In the first year they are taught Eng ish literature, grammar, arithmetic, and bookkeeping for the farm. In the second year they go more extensively into the study of literature and essay writing.

Last, but by no means least, the College suited me financially. The following is an exact amount of my expenses during the two-year course. This statement does not include travelling expenses, cost of new clothes, books or stationery. It must also be noted that being an "outsider" I had to pay $30 a year more than is paid by Ontario boys :

First Year, 1893-94.

Tuition fee		$50 00
Board and washing, October 20th, 1893–June 30th, 1995	$95 34	
Less money earned by afternoon labor during term	32 37	
Balance on board and washing account paid in cash		62 57
Total		$112 97

Second Year, 1894-95.

Tuition fee		$50 00
Board and washing, October 1st, 1894–August 31st, 1895	$125 13	
Less money earned by afternoon labour during term	$60 13	
Money earned by work on farm during summer time	35 00	
Total earned by work	95 13	
Balance on board and washing account paid in cash		30 00
Total paid in second year		$80 00

Hence, the total cost to me in cash for the two years' course was $132.97 ; and had I been an Ontario student it would have cost me $60.00 less, a total of $132.97 for the two years, or $66.49 a year, which would be about the average yearly expense for an Ontario boy who remained one summer term (July and August). If he remained both summer terms the expense would be less than $50 a year for the two-year course. All students are required to work three afternoons each week, and are paid by the hour according to the quality of their work. It will be noticed above that during my first year I earned $32.37 in this way, which is considerably below the average, as I was unable to work full time. In my second year I earned $60.13 by working full time and extra

hours as I had opportunity. Books and stationery cost the average student from $12 to $20 for the two-year course. This shows the Ontario Agricultural College to be an institution which offers special inducements to plucky boys who have to make their own way. Indeed, it is the cheapest two-year course of which I have any knowledge, and as one who has been greatly benefited by it, I heartily recommend it to my brethren on the farms of this country.

In conclusion, let me say that the Institution as a whole is splendidly situated as regards healthfulness of location and moral surroundings, admirably qualified for carrying on the work of educating the young farmers of Ontario, and altogether worthy of the patronage of the best sons of the Province.

AN AGRICULTURAL EDUCATION.

By T. Frank Patterson.

There is an idea among the majority of the agricultural classes of this country at the present time, that it is a useless expenditure of money and time to give those of the rising generation who intend to remain on the farm, an agricultural education. In reply to the question why such an idea exists among them, they generally give the following reasons: First, a young man who intends to farm, does not require a college education to fit himself for his life's work; secondly, an agricultural education has a tendency to educate away from the farm and make a young man dissatisfied with his lot on the farm; thirdly, that scientific theories are all right for the class room, but the majority of them are not practical when applied to every day farm life; fourthly, that times are too hard with the majority of farmers, and that a great many of those who are really able, complain that there is hardly enough money left after giving some of the other members of the family a professionnl education, to send any of their sons who remain on the farms to an agricultural college. In this short article I purpose giving some reasons why the above ideas are to a great extent erroneous; and in proceeding to a discussion of the question, the thought that first arises is,—should the farmer of the present day be an educated man in order to make a success of his business? The answer immediately comes,—it depends on what you mean by success. If we look at success from a financial point only, then we say that there have been many farmers in the past who have become wealthy through long years of toil and bitter experiences. But were they not in a sense educated? They may not have had an agricultural college education; they may not have known the scientific theories about such questions as rotations of crops, soil nitrogen, draining, or the growing of leguminous crops to enrich the soil; but a great many of them had practised these theories, not knowing why they did so. They had learned in the hard school of experience that by following a certain line of action, they got the best results. In other words, they were in reality scientific farmers and did not know it. Now the question is, would not these same farmers have made their business a greater success financially, and a much more pleasant occupation had they at the outset acquired a knowledge of the sciences pertaining to their work? There is certainly no reason why they should not. A great deal of time is lost in personal investigation as to the right course of action to pursue along certain agricultural lines, time which is saved if the farmer has a knowledge of scientific facts beforehand. With an agricultural education a farmer certainly take more pleasure out of his work. He feels that he knows the why and wherefore of what he does, and consequently is not required to work in the dark. He realizes that agriculture is truly the foundation of success in all other pursuits, and he thinks more and more of his favorite occupation.

Never before in the history of this country has there been a greater need of a knowledge of science in dealing with the soil. There was a time, when the soil was in its primeval state of fertility, and all that was required to grow a good crop of almost anything was to "tickle the earth and it would respond unto a harvest"; but such times have passed away. Soils, through years of cropping, have become impoverished, and the

knowledge of science is required to reclaim them and to keep them up to the required standard of fertility. Hence the value of a course of instruction at an agricultural college.

Never before in the history of agriculture has the farmer had so many pests to fight as he has at the present time. New weeds are being constantly introduced from other countries, while some of the long established ones are gaining ground very rapidly. Every kind of crop, from the delicate celery plant to the sturdy elm shade tree, is attacked by some insect pest, or fungus. His live stock are incessantly tormented, winter and summer, with insect enemies of one description or another, and have also to run the gauntlet in trying to escape the various diseases that are likely to affect them. In fact, it is a continual fight to make farming a paying business, and the successful farmer has to act on the motto, "Eternal vigilance is the price of victory." To combat these evils successfully, the farmer of the future should have a fair knowledge of botany, entomology, and veterinary science. He should be a botanist in order to understand the weeds and fungi he is dealing with; knowing their nature he is enabled to adopt a scientific method of dealing with them. He should be something of an entomologist in order to successfully combat the insect pests which destroy his crops; and, lastly, he should have such a knowledge of veterinary science as will enable him to treat the ordinary diseases and ailments which afflict live stock. A knowledge of these sciences may be obtained by taking a course at an agricultural college.

Lastly the farmer should be an educated man in order to elevate his calling. How is it that farming is an occupation looked down upon by the so-called learned professions? Simply because farmers, as a rule, will not educate themselves, and they consequently have not enough self confidence. When competing with members of some other of the professions, they are usually to often content to stand back and exclaim, "Well, I'm only a poor farmer." In this way they themselves lower the dignity of their occupation. Members of the so-called learned professions are thus allowed to usurp positions to which they are not justly entitled. Such a state of affairs would not exist if the farmers of this country would educate themselves along the line of their work. Let them see to it that their sons, who are destined to remain on the farm, are, if possible, given a proper agricultural training; they will then have confidence in themselves and will not be thrust aside when they come into competition with members of other professions.

We are often told that an agricultural education has a tendency to educate away from the farm, and farmers' sons have a tendency afterwards to drift into the other professions. Now we do not hesitate to say that some young men do afterwards engage in other occupations, but they are the very small minority. Over five-sixths of those who pass through the Agricultural College at Guelph, either return to the farm or are intimately connected with some line of agriculture. Those who enter other professions after they leave here would not in all probability have made good farmers, as their inclinations tended in other directions. If a man has a love for farming before he enters the Ontario Agricultural College, in the majority of cases he will have a greater love for it after he has left his Alma Mater. If he takes a course here and does not make a success of his occupation afterwards, the man is generally to blame and not the college he attended. There is a tendency among many farmers of this country to point their finger at some Agricultural College student who has made a failure of farming, and exclaim, "I thought that is how it would be. That is the effect of a college education." In ninety-nine cases out of a hundred, it is the man who is to blame and not the college. There are hundreds of Ontario Agricultural College associates and graduates throughout Canada who are making a great success of farming. They are being closely watched by their fellow farmers, and they cannot help but have a powerful influence for good in the localities in which they are situated. It speaks well for the College when her graduates and associates are the best advertisements she has. Nearly every student in attendance comes here through the influence of some ex-student; and as the number of ex-students increases, the number of students in attendance will also increase.

The third objection offered by some farmers to a course of instruction at an agricultural college, is that the majority of scientific theories along agricultural lines are

impractical. This is to a great extent an erroneous idea. True, many theories advanced by professors of all colleges are not practical, but the greater number of them are, and it rests with the student to a great extent, to cull those which are applicable to his particular line of work. For instance, the man who devotes his time wholly to horticulture might with profit employ some scientific modes of eradication of insect pests, which would not be suitable to the man engaged in general farming, and *vice versa*. An agricultural student above all others, should be a man of good, sound judgment, so that he may be able to judge what is suitable for him to pay particular attention to. We venture the assertion that many young men are sent to agricultural colleges at too early an age to get the full benefit of the course. In the majority of cases a student should be at least eighteen years of age before he enters. At this age, he will in all probability make the best use of his time, and will leave college a much better man than he would have done had he entered earlier in life. A great many of the farmers of Canada think that the Ontario Agricultural College is a place where rich men's sons are sent to put in a good time for a number of years, and that a poor man's son cannot stand the expense of taking such a course. Now, as a graduate of the College, the writer does not hesitate to say that such is not the case. The great majority of the students in attendance for the past three years have been farmers' sons whose fathers were but in moderate circumstances. True, we have some rich men's sons, as all colleges have, but we have also men who came here with but little more than the clothes they wear, and worked their way through college. The writer has taken the three years' course, and does not hesitate in venturing the assertion that it is the cheapest college course, when compared with similar institutions in the United States, or on the continent. During the first year, the total outlay of money was $95; second year, $110; and the third year about $160. Many students have gone through on much less, and we may cite one of the many instances: In October, 1893, a student entered with but $50 in his pocket. Paid $40 for tuition and other expenses, and therefore had but $10 left to buy books. He worked on the farm each alternate afternoon, which students of the first and second year are compelled to do, and other spare time at his disposal for which he was paid on an average of nine cents per hour. At the end of the college year he passed a creditable examination and withdrew $7.50 from the institution. During the second year, the money paid out was $51, and the third year his expenses were $95, making in all a total cost for the three years of $188 50 It is true that his course cost him much more, but he was enabled through the system of paying students for their work, to work his way through and not feel it financially. The majority of students require on an average of about $85 for each of the first and second years. The third year costs much more, as students are not given any outside work. These facts will go to show that almost any young man who has the least spark of ambition can soon acquire enough money to put him through a two years' course at the Ontario Agricultural College.

In conclusion, the writer would say that the course of instruction is all that it is represented to be in the College circular. It aims to give a good practical education to farmers' sons, and others who intend to farm No man who has taken the course, and has endeavored to spend his time profitably, need be afraid to go out into the world and take his place along with students of other institutions. The more the Ontario Agricultural College is known, the more it is appreciated; and we think the time will come when every progressive young tiller of the soil in this Province will find it to his advantage to take a course of instruction within her walls.

THE ONTARIO AGRICULTURAL COLLEGE, GUELPH.

By A. H. Christian.

I am glad to have an opportunity to express my opinion of the Ontario Agricultural College, at Guelph, because it was there that three of the most important years of my life were spent. There I learned the importance of an education, and received not only a stimulus to study, but a growing desire to put into practice the lessons I

learned from day to day. I beg to testify to the fact, that the lessons I learned have illumined my life as a farmer, enabling me to work with much more intelligence and pleasure. The lessons in science which I learned while at the College have laid the foundation for continuous study, which is increasing in interest from day to day. Nature speaks to me of the wonderful works of God. The rocks speak of ages past, while plants and animals declare the presence of an almighty Creator. Well has the poet said :

"To me the meanest flower that grows can give
Thoughts that do often lie too deep for tears."

In speaking of the character and cost of a two years' course at the Ontario Agricultural College, and the benefits a farmer's son will receive therefrom, I wish to give my own experience as to the actual cost of my first and second years. I do not count clothing and other personal expenses, but simply those items which relate to the College, namely, tuition, board, washing, and the books, pencils, etc., necessary for the course. My first year cost me $55 in cash My second year cost me $52 for tuition, board and washing, and $11.50 extra for books, etc. Others whom I know, who did more manual labor, put in their first and second years at somewhat less cost in cash.

The character of the first and second years' courses will show clearly how it is that a student may get such a cheap and good education at the Ontario Agricultural College. During the first and second years each student is required to perform manual labor every alternate afternoon in some one of the different departments, for which he receives pay according to the character of his labor, at the rate of from 5c to 8c or 9c an hour. The amount thus earned is allowed on the student's board bill, which is at the rate of $2 50 per week. Thus the students are enabled to reduce their cash expenses very much ; and the more diligent and industrious they are, the better for them.

In considering some of the advantages to be derived by a farmer's son from a two years' course at this college, let us very briefly compare farming with some other callings, which farmers incorrectly speak of as "higher callings." We hear, while mingling with the farmers of this fair Province, and talking with them concerning their calling and their prospects, murmurings and sad tales too often accompanied by superstition and ignorance. They make such statements as these : "Farming doesn't pay." "There is no money to be made in farming." Wages are so high, crops are so poor, and prices are so low, that farmers cannot live in Ontario and compete with those who, under more favorable conditions, can produce articles of commerce more cheaply, and maintain his social position among people of the 'higher callings.'" But, we ask, why should this be? Why are they "higher callings?" We claim that there are no callings higher than farming. Farming is the first and highest of all callings, save one, which is the proclamation of salvation to fallen humanity. Do not people of all occupations depend largely on the farmer for their daily bread? Let us look for a moment at some of those so-called "higher callings," and see if we can ascertain why they are spoken of as higher. Is the calling of the merchant higher than that of the farmer? If so, it is not because his labor is lighter or more worthy. It certainly is not. But he moves in higher society; he dresses better ; he uses more refined language. Are not these some of the things we regard as making the calling of the merchant and others higher than that of the farmer? But, may we ask, how came they by these advantages? We answer by better education. Hence more refined language, better dress, and higher society. Take the school teacher of to-day. He has to produce certificates guaranteeing his ability to teach. Ministers, also, have to pass certain prescribed examinations. It is demanded of those thus engaged that they be educated. But what are the farmers doing, as a rule? They get a few days' schooling at the public school, and then remain home and plod on in the old ruts. Look again, if you will, at the callings of the doctor and the lawyer. It would be a criminal act for a doctor to practise medicine without a scientific knowledge of his subject. Lawyers and professors are learned men. They are educated in the highest institutions of learning the land can afford. All these callings set a high premium on education, which must be in the line of the calling. But what about the farmer? He, in the majority of cases, is content to be a plodder, and, comparatively speaking, a know-nothing, which means to be a "hewer of wood and a drawer of water" for those "higher callings." These,

we think, are some of the reasons why the farmers so vainly and so foolishly look up to those of other callings, and speak so slightingly of their own. The farmer may admit this; "But," he says, "Where am I to get the education I require to fit me for my calling, and put me on a level with those more highly educated, and that without taking away the love for the farm which I now possess? I cannot afford to attend a high school or a university." Very true, and those are not the places for you to get your education; but we have in the Ontario Agricultural College at Guelph an institution specially adapted to your needs—an institution second to none of its kind on the continent of America. There you may go and mingle with men of your own vocation; and receive a good education as well as a practical and scientific knowledge of the principles of agriculture, thus fitting yourself to stand on a par with those of other occupations. Do this, and refuse to be a "hewer of wood and a drawer of water" for men of any other occupation.

At the Ontario Agricultural College you get a broad and liberal education, including English grammar, composition, and rhetoric, and an excellent course in English literature; also mathematics, including arithmetic, bookkeeping, drawing, mensuration, and mechanics. The farmer requires a knowledge of all these subjects, and more, for we hear so often that farmers cannot raise the crops they did at one time, and that there is no money to be made in farming. My judgment is that the Ontario Agricultural College will help you to raise crops and make more money. I have no doubt about it, because during your two years at this College you will study plants, their nature and relation to the soil, so that you can adopt such methods of cultivation and such a rotation of crops as will economize the plant food in the soil and yield you larger returns. Not only so, but you will study chemistry, which tells you of the elements of which your plants, soils and animals are composed, and how they are combined in nature. Thus you will be enabled to use your plants, soils and animals so as to get larger returns from them. There you will also study electricity, physics, and dynamics, a knowledge of which will enable you more intelligently to work your soil, knowing why and wherefore you plow, harrow, and pulverize the soil to retain the moisture, etc. You will also get a knowledge of dynamics, which will enable you to calculate power, and often economize the energy you have to expend, and a penny saved is a penny made.

But the farmer has to do with live stock as well as soils and plants; and your course at the Ontario Agricultural College will give you a scientific as well as a practical knowledge of live stock, veterinary science, and dairying, including poultry and bee-keeping. You will also get in your two years' course at this College, a practical and scientific knowledge of diseases, including mildew, rust, smut, black-knot, and such like, studied under the microscope in the department of natural history. Thus you will become familiar with the life history of the minute plants which produce these diseases, as well as the tissue and general make-up of ordinary plants. Knowledge of this kind is power and wealth. It will do much towards placing you on a level with educated people of other occupations; and you can get it all for the small sum of from $50 to $60 a year, as I have shown you from my own experience.

But that does not complete the character nor the benefits to be derived from a two years' course at the Agricultural College. There is the experimental department, with its nearly two thousand experimental plots of roots, grains, and grasses, of economic importance, with which every student may become familiar by working among them from time to time. Let us look again at the benefits to be derived from the horticultural department, by practical work among the various varieties of plants and trees, where every student of the second year has to spend a considerable amount of time under practical instruction in pruning, grafting, fertilization, etc. Then we also have practical work in the mechanical work-shop, in which students learn to manipulate by practical work, all the ordinary tools of the mechanic, a knowledge of which will often save a farmer miles of travel and many dollars. There are also social benefits to be derived from the societies at the College, from the Literary Society, having for its object the fitting of the students for public speaking, debating, etc., thus enabling those students who take advantage of this society to express themselves fittingly, when on a public platform, on any ordinary theme; and from the Young Men's Christian Association which aims at

building up the spiritual man, without which all else is a comparative failure; as a man without God in his heart must come far short of his life mark and the high calling of a man, for the greatest teacher that has ever lived has said, "Seek first the kingdom of God and His righteousness, and all these things shall be added unto you."

The Ontario Agricultural College, at Guelph, affords just the education a farmer's son requires, and at the lowest possible cost. Canada wants men, moral men, and above all spiritual men, men who fear God and love mankind; and I am proud of my Alma Mater because of the importance she attaches to this fact, and the high moral tone of her instructions, and the religious example of her officers. No young man can work for two years in the associations of the Ontario Agricultural College, and the city of Guelph, without being influenced for righteousness and truth.

THE FARMER AND THE PUBLIC SCHOOLS.

By A. McNeill, M. A., Windsor.

That the farmer requires as good an education as a member of the other professions is universally acknowledged, yet there is an infinite variety of opinions as soon as the details are mentioned of what he ought to know and how he should be taught. It will, however, be readily admitted that he requires that common intellectual training which is the basis of every education, and which includes at least a knowledge of reading, writing and the simpler operations of arithmetic. It is not often, unfortunately, that we find this supplemented in the case of the farmer with a systematic training in the methods and with the knowledge peculiar to his profession, though it is just as necessary in his case as in that of the lawyer, doctor or merchant. Hence it is that the farmer pays more attention to the public schools of the Province than to the secondary schools and universities. The public school system is justly regarded as one of the best that has been devised. Whenever it has been compared with those of other nations at international fairs or otherwise, it has always received the unstinted praise of the judges or those who have investigated its merits, and its peculiar features have been copied far and wide. But we must not let this blind us to the fact that no matter how perfect it may be as a mere system, its success in actual operation depends to a very large extent upon those who are entrusted with the execution of its details. Hence it is that we must look for the success of our public schools to the trustees and teachers of these schools, and as the teachers are chosen by the trustees, the final responsibility rests with the trustees themselves. The farmers of this Province should appreciate this fact, that they can make the public schools just what they will, without further legislation, by simply enforcing the present provisions of the law and choosing their teachers with discretion. It is not my purpose to point out many defects in our public schools, even if it were possible, but rather to show that such defects as there are, from a farmer's point of view, may, to a very large extent at least, be remedied by a wise administration of law by the farmers themselves. It has been pointed out for instance, that in the public school course there is little or nothing that bears directly upon the actual practice of farming, in fact it has been urged that agriculture as a distinct branch should be taught. If the trustees of a section think this of advantage, there is ample provision made for such a course. A most excellent text-book has been compiled and authorized, and its use highly commended. It would be well, however, to look at what are the conditions necessary to make such a course successful. In the first place the pupils must be of the proper age to appreciate the subject, and sufficiently numerous to justify the extra expense, because it must involve extra expense, except where it crowds out some other subject. If the latter, then it becomes a matter for consideration which is the more important subject, all things considered. But suppose all other difficulties are disposed of, we must still, to make the subject a success, have a teacher thoroughly in sympathy with the subject and possessing the necessary qualifications. That there are such teachers I have not the slightest doubt, but they are not to be found usually among the raw recruits of the profession who offer them-

selves in increasing numbers at decreasing salaries each succeeding year. A man or woman who can make the subject of agriculture positively useful to pupils of our public schools is not to be hired for two or three hundred dollars a year, and rather than have any other teach it I would much prefer to leave it off the list of subjects. The point I wish to make is, that the matter is in the hands of the farmers themselves, and if they will but exert themselves and be willing to pay the necessary price they can have what they want. So, too, with the demand that a fifth form be established in all rural schools. It cannot for a moment be expected that where there is but one teacher, whose time is fully employed under present conditions, a fifth form can be added without seriously interfering with the ordinary work. As the fifth form would be a very small portion of most schools, it would mean that ten junior pupils would suffer very materially for the sake of one senior pupil. Of course where more than one teacher is employed and where the number of senior pupils would justify it, it would probably be expedient to establish a fifth form. And here again there is no need for further legislation, as the matter is at the discretion of the trustees themselves. If I might be allowed to suggest a case in which the law might be changed, it would be with regard to the age at which a teacher could enter the profession. The members of other licensed professions can not practise until they are twenty-one years of age. Why should teachers? The gravest mistakes that occur in the school room arise not so much from want of knowledge as from want of discretion—want of that maturity of mind which comes only with years. Such an age limit would not only secure a much higher order of intellect, but it would have a decided effect in keeping out of the profession those who do not intend to make it a life work. At present every boy or girl somewhat short of funds, working to enter some other profession ultimately, takes out a teacher's certificate as this work is in line with his own, and then teaches a few years, with no heart in the work, but simply "to keep the pot boiling" If he could not teach until he was twenty-one there would be no incentive to take up teaching except as a life work. But even here the remedy is largely in the hands of the trustees. The best men can be retained in the profession by giving them the same remuneration that they can get in other lines of work. I cannot condemn too strongly the shortsighted policy that seeks to lower the salaries paid to school teachers. It is no answer to say that teachers can be got for these low salaries. You may get inexperienced boys or girls and those who would be failures in any walk in life, but you cannot get and retain men and women of strong intellects, warm hearts, and full of enthusiasm for work, at the salaries that are now being paid teachers in rural Ontario. Let us not deceive ourselves. We get in the long run just what we pay for. If the salary of our school is two hundred dollars we get only that grade of intellect. If we make the salary four or eight hundred a year, we get a proportionate grade of work done. Do not attempt to suit the salary to the individual teacher. Put the salary so that it will be equivalent to the remuneration of the best farmers, business men, or professional men, and you will get on the average as high a class of intellect. I do not wish to reflect on the great army of hard-working teachers throughout Ontario. It is no disgrace to be young, and experience and wisdom, I am bound to believe, will in most cases come with time; but I am only calling public attention to what wise critics believe to be the chief danger of our schools, viz., the very large number of inexperienced boys and girls who are employed as teachers. The remedy is simple. Give larger salaries and perhaps raise the age of admission. But after all possible criticisms have been made, our public schools still stand as our surest source of national greatness. Our great resources of mine, forest and fisheries are only valuable when touched by the genius awakened and nurtured in these, and our liberties are only safe when entrusted to a people whose moral and intellectual natures have been strengthened and enlarged by the benign influences of education. Let us make more and better use of our schools. Let us have better buildings and better school grounds and equipments. Let us pay our teachers better and give them our hearty support both in and out of the school room, and I venture to say that even on the low standard of a money investment it will pay us well.

But the public schools do not round out and complete an education suitable for a farmer. Under the most favorable circumstances and with the greatest liberality to be expected, no public school can be equipped to give that special knowledge and special

training so essential to the farmer of to-day. We naturally turn to the High Schools and Collegiate Institutes as our resource, but here I am afraid we lean upon a broken reed. Anyone who has carefully and critically examined the working of these under present conditions, and the spirit that animates both student and teacher, must come to but one conclusion, viz, that they are the schools of the professional classes. I do not condemn them on this account. Indeed I maintain that they are esssentially the poor man's schools and are the means of giving many a boy a chance to attain success in professional life who would have been an undoubted failure in industrial occupations. As long as it is desirable that there should be no obstacle preventing those in one walk of life freely passing to another as their capabilities and inclinations may determine, it will be desirable that our High Schools and Collegiate Institutes are maintained efficiently but with due regard to the needs of society. It is not my purpose, however, to dwell upon the many excellent features of their work, but to show where they fail as secondary schools for farmers. They fail, first, in the curriculum. Not so much in the subjects that are embraced in it as what are annihilated, and in the extent which some are followed, and partly in the methods that must almost of necessity under present conditions be such in teaching them. The natural sciences for instance, so valuable whether we regard them merely as a means of mental training or a source of useful knowledge, are seldom taught with special reference to the needs of the farmer. The practical application of elementary facts, and the infusion into the subjects of the idea that they are intimately associated with the affairs of everyday life, are in most cases entirely absent. The dead languages too, receive attention much beyond their merits. A much more serious defect, however, is the failure to give the special knowledge and training required by any of the industrial occupations. The farmer looks in vain for some application of chemistry to the needs of everyday life or the study of animal life that would assist him in choosing and caring for farm stock, or that would aid him in combatting the ravages of insect foes. It is not to be denied though that a High School Course with all its defects would be a great benefit to a boy of any class if no better were available. Indeed the prejudice that undoubtedly exists against these schools arises not so much from what is taught as from how it is taught, and the moral influences that surround pupils in the class-room and on the playground. Unconsciously, perhaps, the schools have fostered the idea that brain work is of itself higher and more respectable than handiwork. The strong garments and bronzed features of the craftsman are sometimes compared with the soft hands and immaculate dress of the brain worker, much to the disparagement of the former. All manual labor is associated with the janitor, and the dignity of honest toil is enforced neither by precept nor example.

Again, it must not be forgotten that the High Schools are the legalized doors through which only the learned professions may be entered. For this reason perhaps everything tends towards these. A large majority of the pupils are avowedly studying for these professions, and their aspirations naturally affect the minority. The boy who confessed that his ambition was to be a successful farmer would be looked upon as a curiosity in most of our High Schools. It is to be feared, too, that in the thousand and one opportunities that arise incidentally to form the opinions of pupils, both teachers and visitors fail to give agriculture the importance it deserves. As long as these sentiments prevail in High Schools, it will be a dangerous experiment to trust a boy there whose destiny is the farm. Nor is it easy to suggest a remedy. The teachers are too often immature brain workers with sympathies in favor of the professions to which they betake themselves as rapidly as the opportunity offers. To change the sentiment created and maintained by the pupils themselves it would be necessary to invade the schools with a majority of pupils whose aspirations were along the lines of farm life. There is, however, a much more serious defect in the High Schools that renders them radically unsuitable to the needs of the farmer. Agriculture is essentially a handicraft, though it gives scope to, and demands the highest intelligence. But if brain power is acquired at the cost of the ability and desire to labor with the hands, it is at best a doubtful acquisition to the farmer. A school course that occupies practically all the hours of a pupil's time till he is seventeen or eighteen and yet affords no physical labor worthy of the name, and of course no practice of the craft can never be, acceptable to farmers. The boy who delays till this

late day all practical knowledge of his profession, will be apt to make a very poor showing in after life. The sooner the actual duties of the farm are entered upon, the better. If hand in hand with these could go the systematic training of the body, intellect, morals and taste, an ideal system of education would be the result. If while the body were being trained "to do with ease and pleasure all that as a mere mechanism it is capable of", the intellect could be developed and the mind filled with diversfied and useful knowledge that could be applied directly or indirectly to the improvement of himself and the advancement of his profession, then would the student feel the dignity of agriculture, the oldest of professions, "the art of kings."

All things considered, it is doubtful whether the High Schools and Collegiate Institutes can be remodelled to meet the needs of the farmer. The traditions that have grown up around them, the simplicity of their management, and the indifference or prejudice of the masses count strongly against any radical changes in them. It would be better to establish another system of schools that will do for the industrial classes what the High Schools have done for the professional classes. Happily we have in the Guelph Agricultural College a hopeful idea of a rational system of schools to meet the necessities of the occasion. The hostile criticisms of this school, originating either in the imperfections of an undeveloped scheme or in the blunderings of shortsighted party tactics, have all but passed away. Here is taught not only the subjects on the High School curriculum, but concurrently also goes the practise of the art of agriculture. Here too, the farmer student is surrounded by those having the same tastes and ambition as himself, and this mutual moral support does much to develop a sturdy manliness which we are all anxious to see characteristic of Canadian youths. New avenues for the exercise of his intelligence are opened up before him, and he soon finds in farm operations ample scope for all the brain power he possesses. But not farmers alone would be benefited by a course such as is given at Guelph Agricultural College. Just now the claims of industrial education are being very generally recognized by those who have made education a study, and the time is not very distant when some step in this direction must be taken. The intimate association of hand training with brain development is now so well established that manual training must soon be an important feature of every modern school. Does not the College at Guelph furnish a model for industrial schools that should take their place beside every High School, and perhaps supplant some of them? It is not to the credit of the farmers of Ontario that the school at Guelph is not overcrowded with their sons and daughters. The splendid facilities there offered for a liberal education cannot easily be surpassed. It is to be hoped that in the near future schools on similar lines may dot every county in Ontario, subserving not only the objects of industrial education for all classes, but equipping our farmer boys and girls with the intellectual implements of their calling.

AGRICULTURE IN PUBLIC SCHOOLS.

By S. Rennie.

This is an agricultural country, hence the question may be asked, "Should the study of agriculture not be one of the subjects taught in the common schools, especially where nearly all in attendance are children whose parents are engaged in farming?" By the last returns to hand, there are 8,824 school teachers in Ontario, and all told only 7,680 pupils studying agriculture—not one for every school teacher. Now, the trustees and ratepayers have themselves somewhat to blame for this, for in any school section where it is thought wise to have agriculture taught, the trustees, or a majority of the ratepayers can have it; but there is one thing that strikes me, and it is this: Under the present condition of things, how are the teachers going to be able to impart to others a knowledge of agriculture when they themselves have had no opportunity to learn? Some years ago there was considerable agitation regarding the introduction of agriculture into the schools, especially in rural school sections. Then the question of getting competent teachers was the next difficulty. However, to overcome this, the Hon. John Dryden, Minister of Agriculture, very thoughtfully established a summer school at the Ontario Agricultural College during the month of July, where teachers could receive instruction

along the line of agriculture; but, unfortunately, very few availed themselves of this opportunity after the first year, which was 1893. Let us consider what the country school is doing for the farmer's boy. The country school is pre-eminently the farmers' school. There, the great majority of the farmers of to-day receive their education, and there the great majority of those of the next generation will receive theirs. Is the country school doing what it should for the farmer's boy? Is it giving to the boy who will remain on the farm that kind of an education which will be the best preparation for his life's work? What is an education for? Why should a boy spend so much time in the school-room? The purpose of a boy's education is to fit him for his work, whatever that may be. I hold that an education so-called, which does not fit a boy for his work in life is not an education at all. The education given in the country school ought then to fit the boy to be a successful farmer, for that is to be the profession of most country boys. What education does the farmer's profession demand? The ability to read, write and understand the English language, and to make readily all the ordinary calculations connected with his business; that is all, some say, that a farmer needs, and this is practically all that many of the schools supply. But is this enough? Shall we set the standard of education for the farmer at the very lowest notch? Shall we in this way say that the poorest education is sufficient? It is the growing opinion of prominent educators and the more intelligent farmers, that farming is one of the occupations demanding the best education. In no profession or calling is a man brought into closer contact with the hidden things of nature than in farming. A mechanic deals with but one set of problems, connected usually with but one or two kinds of materials. The merchant handles manufactured goods whose qualities are readily known. I might go on and take up profession after profession, and show that in each one there is a special set of objects to be particularly known, and outside of which there is no need to go. How is it now with the farmer's profession? He comes in contact with everything. There is first the soil, a wonderful mixture, good, bad, indifferent, and out of it he must grow good grass, good grain, and good fruits. There too, are the plants; first, those which he purposely grows, as wheat, rye, oats, Indian corn, the grasses and vegetables, which he annually cultivates for their yield of good things. Besides these there are the thousand and one weeds, cumberers of the ground, which come up everywhere as if by magic. There are the hordes of rusts, smuts, mildews, and moulds, a tiny vegetation, but nevertheless a most powerful one. In addition, there are the animals of the farm, and here again are, first those which are domesticated, as the horse, the ox, the sheep, the hog; secondly, the animal pests, such as the rats, mice, gophers, etc., and the myriads of insect foes which swarm on every side. Still there is more; that fickle thing, the weather, which affects the farmer far more than it does even the mariner upon the stormy ocean. It makes or ruins his crops; its changes mean money gained or money lost. The country school boy will come in contact with all these things when he becomes a farmer; but how does the school fit him for his life's work? What does the common school do for the boy who ought to be acquainted with the soil? Does it help him at all? Does it even suggest to him how he may learn anything about it? Does it tell him anything about the plants of the farm? Does it hint to him about the rusts or smuts, the mildews or the moulds? Does it tell him anything about insects? Does it teach him anything as to their habits? I appeal to he experience of every intelligent farmer and in all candor, whether the common school is doing its whole duty by the country boy. Should he not have the opportunity of learning something about the soil, the plants, the animals, the air, and the clouds? Would not a knowledge of these be of the highest value to him in his future life upon the farm? Men and women of the country, I want to make an appeal to you in behalf of the country boy. Give him the opportunity to become acquainted with the things around him. Put the study of soils, plants, animals, etc., into your schools; ask your school teachers to give instruction of this kind; demand of them that they know enough to give such instruction in the right way. If you will employ only the best teachers for your children, you can have these things taught them; but if you are willing to take, year by year, the young and poorly prepared teachers, the work will not and cannot be done. You will have to pay rather more for efficient teachers, but will it not be economy in the long run, for are they not to instruct your children for their life's work.

AGRICULTURAL DEPARTMENT.

FODDER CORN GROWING.

By M. Richardson, Caledonia.

In order to be successful in farming it is necessary to keep up and improve the fertility of the soil. When crops are grown and sold, the soil is so much poorer. For twenty years I have kept enough stock on the farm to consume the greater portion of the crops grown upon it, and put upon the market finished products, principally cheese, beef, pork, and honey. In this way four-fifths of the feed consumed by the cattle can be given back to the land and thus keep it fertile for other crops. In these hard times, one of the essential things is plenty of good fodder produced at the lowest possible cost. Corn is the best article of the kind, and can be successfully and profitably grown on clay loam in the County of Haldimand. I think corn fodder is the best paying crop on the farm. We will compare it with a crop of hay. I see by the bulletin lately issued by the Ontario Government that the average of hay per acre in Ontario is one and four-tenths tons for the past thirteen years, not including 1895, and the average market value for the same period was $9.60 per ton, or $13.71 per acre. What did it cost the farmer to put an acre of hay upon the market? My estimate is as follows: rent, $3 00; cutting and housing, $2 00; drawing to market, $2 00; net cash value per acre, $6.71. This is the selling value; what we want to know is the feeding value of one acre of hay. Herbert Myrich gives us a report based on the analysis of American fodders and feeding stuffs; the result of digestion tests at American and foreign experimental stations, and on the experience of the best feeders in America and Europe. They tell us the feeding value of one ton of hay is equal to at least $10.48. If that report is correct, then the net average feeding value of an acre of hay would be $9 70 for the past thirteen years in the Province of Ontario, against $7.00 net cash selling value, which would show a net loss on all hay sold off the farm instead of being fed on the farm, of $2.99 per acre. I will give you Professor Robertson's opinion of corn first. Speaking at the Central Farmers' Institute in Toronto, Mr. Robertson said, "There never was a year when a man could not by fair cultivation get fifteen tons of corn stalks from an acre of decent land in Ontario." I am satisfied beyond a doubt that I have grown thirteen tons of fodder corn to the acre. The following is the mode of cultivation under which corn has done well with me the past year: the field selected contained twelve acres of high rolling clay loam, about one acre black ground, three years seeded; the high land received a top dressing during the winter of about fifteen loads of manure to the acre. The field was plowed about the middle of May and worked down to a mellow seed bed, and sown on the 13rd of May with about half a bushel of seed to the acre of the following varieties: Leaning Yellow Dent, common Western Yellow Dent and the Mammoth Red Cob Ensilage. We considered the Leaming Yellow Dent the best for ensilage. It matured about six days earlier, yielded a heavy crop of both ears and stalks, some stalks growing to the height of twelve feet with as many as three ears on some stalks. On the 14th of September the Leaming was in the glazing stage; we commenced cutting, and finished filling the silo on the 23rd of September. Exactly four months from the time the seed was sown we finished putting one hundred and fifty-three tons of ensilage into the silo, an average of twelve and three-fourths tons per acre. This corn was sown in drills twenty-eight inches apart, and one stand from six to eighteen inches apart in the drills. Corn is essentially a sun plant, and to do its best requires room. Last summer when the weather was so hot and water scarce, where the cultivator was kept going once or twice a week the ground was kept sufficiently moist, from the water rising through the soil from the great store of water below. By proper cultivation we can insure ourselves against unfavorable conditions of the weather by growing this crop. The following figures will showwhat it

cost me to grow a twelve-acre field of fodder corn and the feeding value: rent, $36; drawing and spreading manure, $24; plowing, $24; six days' cultivating and sowing, $12; six bushels seed, $5; one day harrowing corn, $2; five days' cultivating, $10; hand hoeing, $5; total, $118. Cutting corn: man, boy and horse six days, $12; three men loading, $18; two teams and boy drawing, $20; two men and boy at cutter, $15; total cost of one hundred and fifty-three tons, $183. Cost for producing, $1 20 per ton. The feeding value of a ton of corn is $2 86. If this is correct the gross feeding value of this twelve-acre field would be $437.58, less cost of producing, or $183, would leave the net feeding value $254.58. By having the silo last year, our stock came through the winter in good shape, and left us fifty tons of hay on hand last spring; and with the silo full of good ensilage this year we have thirty tons of hay to spare, selling at $16 per ton, which will help to relieve us from feeling the pinch of the hard times.

WATER IN RELATION TO PLANT LIFE.

By J. Hoyes Panton, M.A.

The importance of water to plants is observed when we consider its influence upon plant life. Among its most important uses are the following:

1. It serves as *food* by entering into the composition of compounds prepared in the plant, such as starch, sugar, etc. This occurs when the carbon dioxide of the atmosphere enters the plants through the leaves. From water and carbon dioxide, the green coloring matter of the leaves (chlorophyll granules), through the influence of light, is able to produce starch. This may be considered the crude material from which several other compounds are formed in plants.

2. It acts as a *carrier* of substances in solution and this transfers compounds to all parts of the plant, where any form of circulation takes place.

3. It performs an important service in maintaining the *firmness* of the cells, especially in plants without woody tissue. When plants wilt it is largely due to the withdrawal of water from the cells, and if not gone too far the flaccid leaves, etc., may be restored by furnishing the plant with more water. Thus we see many plants owe their form largely to the presence of this liquid.

4. It also serves to a considerable degree in modifying the *temperature* of the plant, by rendering it less liable to be affected by sudden changes of heat and cold.

5. Its *solvent* power in the soil is of great importance to plants by rendering substances in it soluble, and thus in a condition to be taken into the plant.

Plants cannot absorb solid substances. Their food must either be in a liquid form or gaseous. Keeping in view the importance of this common compound, how necessary it becomes to preserve it. In many cases this is not done, and vast quantities of water are permitted to waste instead of being employed in the growth of useful plants. There is no doubt that if the conservation of water was more considered and better understood, we would sustain less damage to our crops during a time of drouth. We shall now suggest some ways by which this may be done:

1. *Mulching* is followed by many, especially by gardeners and fruit growers, for the purposes of saving the water in the soil. This checks evaporation, and thus retains moisture among the roots of the plants.

2. *Tillage*, by constantly stirring the soil, makes the surface in such a condition that it prevents evaporation, and in some respects the finely divided surface soil acts as a mulch. It is common practice now among gardeners and nurserymen to keep cultivating during a dry time, and this should be followed more by farmers. The practical man finds to day that constant cultivation serves two objects; one, the destruction of weeds; the other the conservation of water in the soil.

3. *Drainage* also serves to keep the soil in such condition as to retain sufficient moisture to withstand drouth. It gets rid of "free water," useless to plants, and even injurious, and preserves that form best suited to plant growth.

4. *Sub soiling* puts soil in a condition that enables it to keep moisture and withstand the effects of drouth. This has been tested at some experiment station with most favorable results.

5. *Destruction of weeds* is of great importance in connection with the maintaining of moisture in the soil. Very few are aware of the quantities of water that are thrown into the atmosphere by plants, and consequently the growing of such as are not needed, is permitting a waste of water which should be passing into plants from which we desire to be getting useful products. In discussing objections against weeds, we usually enumerate the following: they involve extra labor, render fields unsightly, add impurities to the grain, rob useful plants of their food, smother important plants, afford sheltering places for insects, and are especially wasteful of water. This last is one of the worst and should receive the attention of farmers. During the summer of 1895, the writer conducted some experiments with a view to ascertain to what extent some weeds obtain water from the soil and pass it into the air through their leaves. Two species of plants were selected, the common mustard and the pigweed. These were placed in large pots and put in the garden, where they were surrounded by conditions much the same as in the field. A check pot with no plant, but in other respects the same as the others, was placed beside them. During the time of trial, the average amount of water thrown off daily by the mustard was fourteen ounces, and that by the pigweed ten and a half ounces. The highest amount was on a dry, bright day with light wind, when the mustard showed nineteen and a half ounces, and the pigweed thirteen and four-fifths. On a hot sultry day the amounts were seven and six and a half ounces respectively. Some observations were made during four days of more or less rain, when both plants indicated a loss of six and a half ounces each. This is a large amount of water to have passing through useless channels.

Taking an average of ten plants to the square yard, and calculating the number upon an acre, the mustard plant would throw off twenty-one tons of water, or 4,235 gallons daily. Other observers have experimented with the sunflower and ascertained a loss of 25.30 ounces daily by evaporation from its leaves; and in the case of the cabbage from nineteen to twenty-five ounces. Another way of expressing how much water is used up in allowing weeds to grow, is to ascertain the number of pounds of weed grown and consider that each pound of dry substance has required from four to five hundred pounds of water in its production. With such data before us we are to conclude that a very serious case is made out against allowing weeds to grow among our crops, and that the time has come when it would be wise for farmers and others interested to wage war against weeds by thorough cultivation, so that the water of the soil may be used in the growth of useful plants, especially in times of drouth.

ENRICHING AN IMPOVERISED FARM.

By T. G. Raynor, B. S. A., Rosehall.

Land becomes impoverished when it is repeatedly sown with those crops which return little or nothing to the land in their growth, but on the contrary abstract the elements of fertility. It is known that there are ten essential elements which enter into the composition of plant life. Seven of these are usually present in an available form to mature a good crop. The absence of any one of the three, in whole or in part, will interfere with the growth of the crop. These three elements are nitrogen, phosphoric acid, and potash. They are valuable in the order named. Commercial nitrogen fertilizer is

usually worth seventeen cents per pound; phosphoric acid, eight or nine cents; and potash five cents. In the cultivation of our farms, any crop which will supply nitrogen, is useful. Such crops are clover, peas, vetches, etc., which belong to the family called legumes. They are known as nitrogen gatherers. This, science has proved recently beyond the possibility of a doubt. The cereal crops as barley, oats, wheat and corn are termed nitrogen consumers. Taking an impoverished farm as our basis, the first thing would be to find, if possible, the cause, viz: first, whether weed life and repeated cropping had exhausted the available plant food; second, whether it is in need of better drainage; or third, whether from any other cause. I would prepare the ground as thoroughly as possible, and sow buckwheat early, and when about the blooming stage would plow under and resow with buckwheat for a crop to be harvested After working the land as much as possible in the fall, I would apply what available manure I had as a top dressing during the winter or early spring, and work it into the soil during the preparation of the seed bed with the cultivator and harrow. Then this seed bed I would seed down with red clover, sowing it with the usual nurse crop. If I could get the clover to grow I would expect that the victory is mine. Every one knows the benefit of growing clover. A hay crop may be cut and the second growth allowed to go to seed and harvested, and when this lea is turned down it makes a very rich seed bed for any kind of grain to follow. As a nitrogen gatherer, it is a cheap way of manuring the land. A second growth crop plowed under occasionally will give the necessary amount of humus or vegetable matter so essential to fertile soils. Peas plowed down have the same effect, but it is a more expensive way. I would endeavor to follow up this system with every field until the whole farm would grow paying crops. To keep the land in good condition, I would follow some system of rotation in cropping, best suited to the locality. I would grow considerable quantities of corn, and keep as much stock as would consume the bulky foods and coarse grains. I would endeavor to make as much manure as possible and handle it properly. Once the land was strong and in good tilth, I would try to keep it so, and would feel that a fair measure of success should be mine.

Q Where can nitrogen, phosphoric acid, and potash be obtained? A. Besides getting them in special fertilizers and in well cared for barnyard manure, nitrogen may be obtained from the atmosphere of which it contitutes four-fifths, and also through the agencies of such plants as clover, peas, etc. Phosphoric acid may be obtained from the bones of animals; and potash from wood ashes. It does not pay to sell wood ashes.

Q How would you find out the cause of the lack of fertility in soils? A. By finding out what ingredients the different kinds of crops drew on most heavily, and testing the different fields with these crops. Lack of luxuriant growth would indicate the need of nitrogen; small shrunken seed the need of phosphoric acid and potash.

Q What effect would the plowing under of buckwheat have on the land? A. It world smother many weeds. It would add humus to the soil, increase the water-holding power of light soils, and make them firmer at the same time. It would make a heavy soil more friable.

Q How can you get the clover to catch? A. Sow plenty of seed, eight to ten pounds to the acre. If sowing with the seeder, let the seed fall in front of the drill hoes, and sow about sixty or seventy pounds of plaster per acre. Seed early and if possible on land that has been top-dressed. Do not pasture the first season.

Q Have you anything to guide you as to what rotation to adopt? A. Follow a shallow growing crop by a deeper rooted one. A crop that is hard on the land, by one that is less exhaustive. A nitrogen-consuming crop by a nitrogen-gathering one.

THE FARMER'S FERTILIZER.

By D. Z. Gibson, B. S. A.

Successful farming depends upon successful crop growing. This is true in nearly all cases regardless of the line of farming pursued. It does not require much calculation to prove that the farmer who raises the most food per acre will, other things being equal, make the most money. Large crops are therefore absolutely necessary if much profit is to be derived from the business of farming. But even the most skillful farmer cannot grow good crops, except his soil be naturally very rich, for any length of time, unless he restores to the land, by some means or other, the larger part of those plant food ingredients contained in the heavy crops removed. In view of these facts then, the question of maintaining the fertility of his farm confronts every farmer. How can this question be worked out? At the present day there are many methods, the practising of any one of which, or two combined, will enable the farmer to keep his soil in a fair state of fertility. The cost, convenience, adaptability, certainty of action of any method, is something that must be considered. It is the intention of this paper to deal only with farmyard manure; believing it to be a factor that will ever continue to play an important part in fertilizing the farm. In the future it may be necessary to use artificial fertilizers as they are being used to day in the New England States and in Europe. Some find it profitable to do so now in this country. But it is questionable if the average farm in Ontario is sufficiently exhausted in mineral constituents to justify the use of artificial fertilizers to any great extent. It is well also to bear in mind in this connection that along with thorough drainage a knowledge of the chemical properties and the requirements of the soil is necessary before it would be wise to expend large sums in enriching our farms in this way. Our experimental stations have not yet clearly proven to us that the commercial fertilizer is a great boon to the farmer. Therefore at the present day, all things considered, farmyard manure is the safest and most important source of enrichment for the land. It is certain in its action. It supplies plant food nearly similar in composition to the plant itself. Its effects are also durable. It exerts a good influence on the land when decaying, inasmuch as it renders insoluble plant food soluble, when it can then be made use of by the plant. It is also especially valuable in furnishing vegetable mould or humus, the presence of which in any soil makes it warmer and at the same time more retentive of moisture, which is important in seasons of drouth. Heavy soils are made porous and more easily worked, while on the other hand it renders light soils more compact and less liable to leach. Because of these important advantages it becomes the farmer to pay close attention to it and handle it carefully so as to save as much as possible of it. Farmyard manure is not a concentrated fertilizer, and is rather bulky and expensive to handle. This is perhaps its greatest disadvantage. It costs no more to handle a ton of rich than a ton of poor manure containing only half as much plant food; therefore the labor of handling plant food in rich manure is less than in poor manure; hence the advisability of making manure as rich as possible as long as it is consistent with economy. The quality of the food fed effects the richness of manure, and we can only expect a rich manure from food rich in manurial constituents. The care of manure also governs richness, and right here is a wide field for study and observation which are necessary if the best results would be obtained. The elements in manure that that are of practical value, and concern the farmer most, are nitrogen, phosphoric acid and potash. Fattening animals void about ninety-five per cent of those elements, while the droppings from milking and growing animals are not quite so rich. Generally speaking the liquid manure from common farm animals is worth twice as much as the solids, excepting that from the working horse, when it is worth nearly three times as much. The liquids also contain food in a more available form for the use of plants. Yet in the light of these facts some farmers bore holes in the horse stable floor so that the liquid may run through and not spoil their horses, and at the same time carefully collect the solids and haul them to the land, thus saving the chaff and losing the wheat. Allowing farm

stock to lie and roam about yards, lanes, and other by-places, will result in the loss of much fertilizing material, since the excrements voided in those places seldom if ever reach the fields. In the hog house where concentrated foods are fed, large loss will take place if the bedding which is necessary to absorb the liquid is insufficient. Liquid manure left unobsorbed for twenty-four hours in a gutter behind the cows will ferment causing about a third of the nitrogen to pass off in the atmosphere. The necessity for providing absorbents such as straw (better if cut), gypsum, muck, or loam, is, therefore, very apparent. Horse manure when convenient is used by some as an absorbent in the cow stable. When thus mixed with cattle manure it will not fire-fang so readily; another great source of loss in many instances. A great deal has been said and written about stock raising and dairying as a means of retaining or restoring the fertility of the farm; but is it not to a great extent in vain, if those channels of waste above mentioned (and there are many others) are not cut off? The best place to make manure is in an apartment where stock are allowed to run loose. In such places the liquids and solids are well mixed. The manure is packed by the treading of the animals upon it, and fermentation is largely prevented. In cold weather it will not be frozen and can be hauled direct to the land any time. The liability to waste is thus reduced to a minimum. This method can be practiced to a certain extent by nearly every farmer since dehorning has become so common. The old notion that manure must be well rotted before being applied to the land is fast dying out, and the sooner the better for the farmer. It may look more like manure when rotten than when fresh, but it cannot be any richer, and the chances are ten to one that it will be a great deal poorer in fertilizing properties. Prof. Roberts, of Cornell University, found that horse manure if piled up loosely for four or five months lost half of its manurial value, while cow manure under the same conditions suffered to the extent of forty per cent. The same manure closely packed lost only ten per cent. When loss occurs in nearly all cases it is in the handling of manure before being applied to the land. In view of this then, it should be spread upon the land in as fresh a state as possible. Practically no waste will take place from leaching unless the land be very hilly. When applied fresh more humus or vegetable mould is added to the land with its accompanying advantages. Very little will be lost through being exposed to the air. There is also an advantage in having this part of the farm work over before spring work comes on. If manure cannot be hauled out as it is made, on account of deep snow or other causes, a covered yard or shed should be provided so as to prevent leaching. Some have uncovered yards formed so as to slope from all sides to the centre. Of course in this case if the bottom of the yard is impervious no manurial value is wasted, but the manure is saturated with rain and melted snow, and the labor of handling is increased because of the large amount of useless water to be lifted. Scientists have been trying for years to convert the free nitrogen of the air into some article for man's use, but as yet the farmer only has made a success of it. This is accomplished through the growing of leguminous plants, such as clover, peas, beans, etc. When these are grown and fed to stock and the manure carefully saved, the fertility of a farm may not only be maintained but can be increased in its supply of nitrogen, that most valuable and at the same time most fickle element in farm practice. It is ever striving to outwit the farmer, to get out of his grasp and get into the air again. As clover, peas, and beans require large amounts of phosphoric acid, potash, and lime for successfull growth, and as there are other crops that must be grown on the average farm that cannot get their nitrogen from the air, it becomes necessary for the farmer to supply these in some way or other if he would maintain fertility. He can do this by feeding the crops grown upon his farm and returning the manure to the fields. If concentrated foods such as oil cake, cotton-seed meal, bran, etc., are bought and fed he can increase the fertility. In conclusion, it can be safely said that without the use of artificial manure the fertility cannot be *maintained*, let alone *increased*, unless close attention is given to the manure heap, aptly termed "the farmer's treasury."

LIME AS A FERTILIZER.

By R. Harcourt, B.S.A, O.A.C., Guelph.

The theory of the use of lime as a manure is a subject full of interest and importance, and it may be added, of apparent contradiction. In some sections of the country lime is applied with good affect, while in other districts the practice has been given up on account of the small returns received. Some authorities state that lime gives its best results on heavy clay lands; others maintain that better returns are received from light sandy soils. It is hard to say why opinions should differ so widely, but no doubt many of the misconceptions, and much of the abuse lime is subject to, arises from a lack of knowledge of its effect on the soil and the constituents in the soil. The benefits arising from the application of lime to farm lands, which are in many cases great, do not arise from any distinct fertilizing ingredient of its own. Plants require lime for their proper developement; some require it in very large quantities, but usually the soil contains a sufficient quantity of this constituent to furnish all that is needed by the growing plants. To clearly understand the benefits derived from liming, special attention must be given to the physical and chemical action of this substance upon the soil itself, and upon the various constituents of the soil.

Lime has a decided beneficial effect upon the mechanical condition of both clayey and sandy soils. Contradictory as it may seem lime tends to lighten clay soils, and to render firmer and more compact the light soils. If a portion of heavy clay be puddled, or worked up with water until it is a pasty mass, and then allowed to dry, the result will be a mass of almost stony hardness. If, however, to a portion of the same paste a little lime be added a difference in texture is noticeable at once, and upon drying, the mass will crumble down at a mere touch. Or it to a pail of clayey water, which has stood for some time without becoming clear, a little lime be added, the fine particles of clay tend to flocculate and in a short time will settle to the bottom, the water becoming clear. Upon drying the soil precipitate, it will be found loose and mellow. When lime is applied to a clayey soil a somewhat similar action takes place; the adhesive nature is destroyed by their flocculation, rendering them pervious and more easy of tillage. Once get the clay into this loose, friable condition, it will remain so until again puddled. The opposite effect of lime on sandy soils is owing to the formation of humate of lime which tends to fill up the spaces between the sand grains and cement them together. The increased firmness thus obtained is of considerable importance in retaining moisture.

Besides these actions, which affect the physical condition of the soil, lime exerts a chemical change in some of the soil constituents. The soil is formed largely from decomposed rock; certain forms of which (for instance feldspar) contain potash and smaller amounts of phosphoric acid. These are, however, held in such a form that the plants cannot feed upon them. Innumerable particles of these rocks are mixed with the soil, and as a result of various changes going on in the soil, are continually decomposing, liberating potash and phosphoric in a soluble form. Lime by reason of its chemical action on the rock particles, hardens this decomposition, thus rendering an increased amount of these valuable fertilizing constituents available for plant growth. Lime also hardens the decompositions of the vegetable matter of a soil. This organic matter is the natural source of nitrogen, but like the rocks, it must undergo decomposition or decay before its fertilizing ingredients are of any use to the growing plants. The conversion of ammonia into nitrates is the result of this decay, and nitrates are not easily affected without a proper amount of lime. The micro-organisms producing this change, which is known as nitrification, apparently require the presence of lime to utilize the acids formed. Lime is specially valuable on sour, marshy, lands. It not only hardens the decomposition of the large amount of humus present, but owing to its alkaline nature, corrects the sourness or acidity natural to such soils. By this means, the coarse marshy grasses may be displaced by those common to cultivated lands. When applied in the caustic form, lime may act as a fungicide in destroying some of the hurtful forms of fungi harboring in the soil.

It will thus be seen that through its chemical action on the constituents o the soil, lime tends to render available the three main constituents of plant growth, and for this reason may give greatly increased yields. But it must be remembered that it is simply a stimulant, and therefore, should be used with moderation. Wonderful yields may follow the application of lime to a field, but as it contains no essential element of plant growth, its action being simply to liberate that already there, its continued use may reduce a soil to the verge of sterility. There is considerable truth in the old proverb, "Lime enriches the father, but beggars the son."

It is difficult to say just what soils will be benefited by liming. It is a matter that must be settled by individual experiments. As a rule, heavy clay lands are improved, but sometimes not. The same is true of sandy soils. Well drained marshy lands are benefited by the application of enough lime to neutralize their undue acidity. Owing to the large amount of mineral matter taken up by the legumes (clover, peas, vetches, etc.,) lime usually gives marked results when applied for their crops. On heavy soils, by reason of its mechanical action, lime may be of great assistance in preparing the land for roots. The better tilth gained may make all the difference between a good and a bad crop. In considering the amount of lime to be applied per acre, we must not lose sight of the fact that it is possible to over stimulate the land and thus render available more fertilizing constituents than can be taken up by the growing plants; the balance being soluble may be carried deep into the soil or run off in the drainage water. On ordinary cultivated lands one ton to the acre is the amount usually applied. On marshy lands the amount may be increased to three tons per acre, with profit.

THE VALUE OF AGRICULTURAL EXPERIMENTS.

By G. E. Day, O. A. C., Guelph.

The large amount of money annually expended upon agricultural experiment stations in the different countries of the world, is an evidence of the importance attached to agricultural experiments. To attempt to justify this expenditure would be going outside the prescribed limits of this paper, and a brief discussion of the value of the information furnished by experiment stations, is all that will be attempted. There are two classes of people interested in experimental work, the public and the experiment station worker, and unfortunately for the best interests of both, there is often a misunderstanding between them. It is an extremely difficult matter for the public to realize how many difficulties lie in the way of the experimenter. A thousand different questions perplex the public mind, and the experimenter is requested to answer them in the shortest possible time. His resources are necessarily limited, but he sets to work upon some of these questions and attempts to answer them by carefully conducted experiments, knowing that his results are subject to influences beyond his control, and that many repititions of the experiment are necessary in order to afford a satisfactory answer. But the public becomes impatient in the meantime. The experiment has been performed once, twice, or perhaps oftener, and something new is demanded. What must be done? In most cases the experimenter is a public servant, and if he is to retain his place in public esteem and keep pace with his competitors for public favor, he must drop the work which was only well begun and comply with the demand for something new. Thus many a valuable experiment has been abandoned and its results rendered misleading, and hence worse than useless, simply because the public insisted upon regarding the question as settled and would scarcely listen to anything more in connection with it. It is of great importance that the public should understand the exact value of any particular experiment or set of experiments. A single experiment may be very misleading and its results differ widely from those of succeeding experiments of the same kind. This is especially true in regard to experiments with animals, since the individuality of the animal may cause a

greater variation in the result than is caused by the breed, or the food, or whatever may be the question under investigation. Experiments relating to breeds are particularly unsatisfactory, and nowhere does individuality exert a greater influence than in the case of dairy cattle. In every breed of dairy cattle there are cows that are practically worthless, and all degrees of shades and merit are to be found between the highest and the lowest. Then how is the experimenter to procure animals that fairly represent the breed? The best cows clearly do not represent it, the worst ones certainly do not; then where is the happy medium, the average cow, and how is she to be found? If those people who so frequently ask which is the best breed of dairy cattle, and who complain so bitterly because experiment stations cannot answer the question, would only give the matter a little thought, they would doubtless come to the conclusion that the great-grandchildren of our children's children may possibly be able to answer the question, but the present generation will never be able to do so.

Among flesh producing animals individuality is not quite so marked, but it is sufficiently strong to make the results of breed comparisons uncertain. Cattle probably vary more than sheep and hogs, and, owing to the small number of animals usually employed in making comparisons, the value of such tests is questionable. With sheep and hogs a larger number of animals may be employed, and therefore the results are rather more satisfactory, because the larger the number of animals the less marked is the influence of individuality. But even with sheep and hogs a single experiment is practically worthless, and, until a long series of carefully conducted experiments have been carried out we should be very careful how we quote results, and how we allow our judgment to be influenced thereby. The most satisfactory live stock experiments are those connected with testing the effect of different kinds and quantities of food, but even here the individuality of the animals enter to complicate results, so that it becomes necessary to repeat an experiment a great number of times before conclusions can be drawn with any degree of certainty. The uncertainty which attaches to live stock experiments, enters, to a greater or less degree, into all experimental work. The influences of the soil, of climate, of season and of a thousand varying conditions, combine to affect the results of the experimenter, and to render the solution of apparently simple problems a matter for years of patient investigation. Is experimental work, then, a useless undertaking? Not by any means. We have only to look back upon the work that has been accomplished in order to satisfy ourselves upon this point. Every properly conducted experiment adds to our store of knowledge regarding the particular subject with which it is connected, and, though it may not settle the question involved, still it enables us to think more intelligently, and serves as a finger-post to guide us in the intricate paths of agricultural science. But we must learn to study these questions from different standpoints; we must gather together all the available knowledge regarding them; we must learn to weigh, to compare and to think; we must learn to make allowance for varying conditions; and, above all, we must learn to be patient. Institute workers especially should give this matter careful consideration. The less a man knows regarding experimental work, the more confident he is, and men can be found who pin their faith to a single set of results which they happen to have read in some one of the numerous bulletins which are issued to day. Such men have not the faintest conception of the true value of experimental work, and when they are shown this error they are apt to go to the other extreme and loose faith in experimental work in general. "If there is a folly greater than assuming that we know *everything* because we know *some* things, it is to give up what we *do* know because there are some things we do *not* know." These, or something like them, are the words of a noted minister, and how well they apply just here! The feverish impatience of the public and the urgent demands for results; the tendency to jump at conclusions and to condemn experimental work because those conclusions may be wrong; the temptation to abandon work which is only well begun and to search for something new to tickle the public fancy; all these things interfere with the value of experiment station work, and when the public learns to estimate experimental work at its real value, and to insist upon quality rather than quantity, an important step will be made towards advancing the true interests of scientific agriculture. But let us not be discouraged. It is true that the

way is beset with difficulties, some of them apparently insurmountable, but the knowledge that much has been accomplished must be our encouragement. Many of the problems which confront us will never be solved in our day, but we can add something towards their solution; and if the day ever comes when the public and the experimenter shall be united in purpose, a mighty impetus will be given to the great work in which our experiment stations are engaged.

LAND DRAINAGE.

By Thos. McMillan, Seaforth.

In the improvement of the physical character of soils, the first place must be given to under-drainage, because it must precede all other methods of improvement. In fact, all efforts at effectual cultivation must be a failure so long as the land is allowed to remain in a watersoaked condition, as the more we work it in this condition the more solid and less porous it becomes; the reason is simply that the continued overplus of water effectually excludes the air and prevents it from exercising its beneficial influence upon the soil. This condition also prevents the warm rains of summer from penetrating the soil and producing the beneficial effects which they otherwise would. A great many farmers would lead us to think from the network of water furrows that they have on the surface of their fields, that the object in draining is to get the water into the land. We may expect satisfactory returns where the rainfall finds a gradual passage through the soil, sinking where it falls, carrying the warmer temperature of the air into the land, carrying also, the elements of plant food which the air contains to the roots of plants, and making room for the air itself, that great element upon which the very life of vegetation depends. No matter how rich a soil may be naturally, there is probably not more than one per cent. of its substance at any moment in a fit condition for nourishing crops. The great bulk of it is in a tied-up condition, unavailable for present use, and is only slowly liberated by the action of air, heat, moisture and manure. Therefore, knowing this, we can understand that our soil is simply a great laboratory, in which the elements of plant food are constantly being prepared for the use of plants; and the productiveness of a soil, at any time, depends upon its condition being such as will enable these elements to properly perform their work. I have already stated that land in a water soaked condition prevents the air from exercising a beneficial action on the soil, because it is excluded. Some of the benefits to be gained by draining are: 1. It deepens that portion of the soil where the fertility is available, because it carries off the surplus water and allows the air to penetrate to a considerable depth. 2. It assists pulverization. 3. It also prevents surface washing by enabling the rains to sink as they fall and percolate through the soil, and the overplus to be carried off by the drains. 4. It tends to lengthen the season of growth as it enables us to get on the land earlier in the spring, cultivate later in the fall, and drained land drys more rapidly after heavy rains during the summer. 5. It makes the land lighter to work, as it prevents baking. 6. It prevents plants, more particularly fall wheat and clover, from being heaved out by the action of frost. We all know from experience how injuriously frost acts upon the wet portions of our wheat and clover land in the early spring. 7. It tends to prevent drouth, for although to those unacquainted with the principles of drainage and its effect upon the soil, it may appear inconsistent to say that land well drained is dryer in wet weather and more moist in dry weather, yet all experience proves this to be the condition of a well drained soil. 8. Upon land in this condition weeds also are much more easily killed, as crops which are sown are very much more likely to grow and thrive and thus tend to smother weeds and prevent their coming to maturity. 9. By allowing the warm rains of summer to filter through the soil before being carried off by the drains, the soil is thus able to retain and absorb almost all the plant food which is thus brought down from the atmosphere; and the surplus water having gone, space is left which is filled by

the warm air which raises the temperature of the soil higher than could ever be obtained in a wet soil, because in a wet soil where the pores of the soil are constantly filled with water, the land is full, as water is a poor conductor of heat, and the heat which would otherwise penetrate the soil is absorbed by the vaporating water which is on or near the surface. In order to practically test the actual difference in the temperature of drained and undrained lands, elaborate experiments have been conducted with thermometers in red moss land, with the result that a depth of seven inches from the surface a temperature of 10° F. was gained in drained compared with undrained land in the same field. All these conditions tend to give us an earlier harvest, a greater variety of crops, a better quality of produce, and a more abundant yield, results which we are all striving to obtain. Further, with regard to the application of manure, the secret of success in the operations of the successful farmer is the fact that he is able to give back to the soil all or more than is extracted by the growing crops; yet it is simply time misspent to apply manure to wet lands, as they are unable to effectually extract from it the fertilizing elements it contains. This alone should be sufficient to induce any farmer to thoroughly underdrain his land where it requires it. No rigid rules can be followed in the draining of land. The nature of the soil and the subsoil, and the inclination of the surface must be taken into consideration. We must also find out, if possible, whether the wet is surface water or springs; when this is understood it will be easier to decide upon the best plan of drainage. The first and very important point in drainage is to find a proper outlet, which should be from eight inches to a foot deeper than the small drains which are to be put in. Avoid, if possible, open ditches as leading drains. If an eight inch tile will take the water, do not leave an open ditch. Where an open ditch must be used, keep it well cleaned out so that the drains do not become blocked. Have as few openings as possible into open ditches and you will be less bothered in keeping the opening clear, and further, the action of frost and the atmosphere will in time crumble the tile which are thus exposed. To overcome this difficulty it is a good plan to put stone in for four or five feet, built with an opening fully as large as the tile. Upon level land, of a uniform quality, the main drain should be placed on the lowest ground and dug from three to five inches deeper than the latter one, which may run at right angles to the former, but always enter with a bend at from ten to fifteen feet from the end, that the water coming from them may flow easily into the main drain without causing back water by the meeting of the two currents. If, where the drains should be placed there is quite a slope and there is any danger of the soil being washed off the tile during a freshet, I would always place the main drain a little to one side of the runway. The depth of the drains and their distance apart must also be determined by the nature of the soil. In a very stiff clay soil of considerable depth, I have seen drains which were put down three feet, being almost entirely useless, owing to their being placed too deep; but upon digging fresh drains in the same part of the field, two feet deep, they will draw much farther. Upon such soils we should have comparatively shallow drains at close intervals. Upon more open soils the drains can be placed deeper and farther apart. The best time to go into a field to see where drains should be placed is in the spring, when the snow has disappeared and just after a good rain. The places requiring drains will generally be seen to present a glazed and watery appearance; this is more particularly the case upon springy land and on knolls where water rises. Upon grass lands the wet spots generally present a rough surface, caused by the frost heaving the roots of the plants. Drains should be dug in the damp season, in order to be sure of sufficient fall and a level bottom, as we then generally have plenty of water oozing from the soil for levelling purposes. Some writers advocate the use of instruments for levelling purposes, but to the intending drainer I would say, the most practical method, that of actually seeing the water running, is the simplest and best, and when the drain is dug, if there is any doubt as to the fall and no water running, bear in mind you have already done too much to have your drain finished imperfectly. If it is but a short piece of which you are in doubt, carry a few pails of water, and if a long distance take a barrel of water, and you will be surprised to see how far it will run even in the bottom of a dry drain.

When available, round tile is the best material, but the bottom of the drain must be made smooth and even. Great care must be taken in laying the tile firm and even. In

laying the tile we always start from the outlet and lay up grade, standing on each tile after it is laid and has received a tap up against the last one to see that it is lying close and sound. If you come across any soft spots or quicksand, dig the drain a little deeper than the tile is to be laid and tramp the extra depth with clay on which the tile may be firmly laid. Then over the tile tramp about three inches deep of surface soil, after which fill with the plow.

We never let draining at so much per rod for contract or to put in the tile. This is the most important time, and the farmer should be present to see that the work has been properly done, so we always put in the tile and fill the drain ourselves. The cost of draining depends upon the quality of the soil, the price of the tile, the distance it has to be drawn, etc. Our tile cost us in 1895, at Seaforth station, six miles from home :

2½ inch bore, per M	$ 9 00
3 "	11 50
4 "	17 50
5 "	22 70
6 "	33 60
7 "	45 00

It cost when laid in the field :

2½ inch bore, per M	$11 00
3 "	13 50
6 "	39 00

For digging drains we pay ten cents per rod and board for drains under two and one-half feet deep, and twelve and one-half cents per rod for drains that depth and over At these prices a three-inch tile drain will cost about forty cents per rod, and a six-inch tile drain about ninety cents per rod. To drain land as we have it drained, with the drains on the average of about four rods apart, it will cost in the neighborhood of $15 per acre, and I am convinced that draining, where it is required, will pay for itself in from three to five crops. A farmer with plenty of help can drain cheaper by taking off the surface with a plow and loosening the second furrow without the mould-board before shovelling it out. Proper draining spades and scoops for taking out the bottom of the drains should always be used. Every farmer should have a map of his farm drawn on paper to a certain scale, and each year as he sinks his drains place them upon the map, which will thus be found very convenient for future use.

CULTIVATION OF THE SOIL.

By Wm. Rennie, Farm Superintendent, O. A. C., Guelph.

To secure the best results from our farms certain principles must be adhered to, in order that the fertility of our soil be not only retained, but increased, and at the least possible cost. Many of our new lands in this Province, when first cultivated, were capable of growing good crops for a number of years, but in many cases the supply of plant food has now become exhausted, and to renew our farms so that they will produce crops as formerly is the all-important question at the present day. In order to do this, one of the first steps to be taken will be to adopt a system of rotation of crops which will be best suited to the circumstances, considering the location, the kind of soil and the number and kinds of animals to be provided for. In adopting a rotation it is essential that a crop of clover or sod be plowed under every three or four years, in addition to the barnyard manure, in order to restore the required amount of vegetable matter for the growth of

cereal and other crops; and it is not necessary to fill the soil with vegetable matter, but it must be made available as plant food before we can derive any benefit from it. It is ordinarily supposed that a chemist has only to make an analysis of a soil in order to tell you what it lacks, and what elements should be added in order to make it productive. What chemical analysis does actually show, is the elements that are present and in what quantities, but it does not tell whether they are available as plant food or not, and it is just this point that we require to know in order to supply the deficiency.

Plowing under a crop of some leguminous plant, such as clover or peas, together with a liberal application of barnyard manure, will provide sufficient plant food for one or two crops of grain, but it must first be made available for plant food by the action of heat and moisture. This vegetable matter in the soil is termed "humus," and when decomposed by the bacteria of nitrification, its constituents become available as plant food. Humus in a soil has a distinct value apart from the plant food which it contains. It absorbs and retains moisture much more readily than any other ingredient, so that a soil which is rich in humus will withstand drouth very much better. It aids in the decomposition of the mineral matter of the soil, changing unavailable into available plant food. It fixes ammonia in the soil, and thus prevents it being lost by leaching or evaporation; and it improves the mechanical condition of a heavy soil, making it lighter, more porous, and less adhesive. On a sandy soil it seems to bind together the loose particles of sand, and so prevents the excessive leaching of plant food. Stimulating fertilizers, such as gypsum, lime and salt may be used to advantage on a soil which is well supplied with vegetable matter to change it into available plant food quickly; but as these are only stimulants, and do not furnish much plant food in themselves, their continued use must, and does exhaust the soil of its supplies of nitrogen, potash and phosphatic compounds, so that the result is a more rapid and complete exhaustion of the soil than when these stimulating fertilizers are not used. That is why the use of land plaster does not give such good results as in former years.

In adopting a system of rotation of crops summer-fallowing should not be included, because plowing the land several times during the summer season adds nothing to its fertility, but is particularly destructive upon the humus and nitrogen. It temporarily puts the soil in better condition by improving the tilth, and thus making some of the plant food already in the soil available; but before it is required a large portion of it is lost by leaching and evaporation. The rotation adopted at the Ontario Experimental Farm is a four-years' course, viz., first and second year, meadow and pasture, principally clover; third year, corn, roots and peas; fourth year, grain, viz, wheat, oats and barley, with all of which clover and grass seed is sown.

Sod land should be plowed soon after haying, say the last week in July, or the first in August. This will give ample time for the clover and grass roots to decompose, and become available for plant food the following season. As soon as the land is plowed, it should be thoroughly pulverized on the surface, with a common harrow or disc; this will act as a mulch, and hasten decomposition, and at the same time it will start Canada thistles, and other perennials, and germinate any weed seeds which may be on or near the surface. When these are two or three inches high the broad-share cultivator should be used, cutting off every weed about two inches below the surface, when a single stroke of the harrow will leave them in good shape for the sun to destroy. This should be repeated at intervals of about two weeks until November, when the land intended for corn roots and other old crops should be manured and then ribbed, or drilled up with a double mould-board plow; this will throw all the manure into the centre of the drills, where it will decompose and mingle with the soil (and will not be washed out by rain and melting snow, which will run off into the furrows), without disturbing the manure and decomposed vegetable matter in the heart of the drill. In the following spring, when those drills are harrowed down, the soil will be in the best possible condition for growing corn and roots. The cultivation of these crops should be shallow, but thorough, during the summer. As soon as the peas, corn and roots are harvested, instead of fall plowing, go over the land with a set of grubber teeth in the cultivator, as deep as possible, and

follow with the broad-shares. On light land no further cultivation is required in the fall; heavy clay land had better be drilled up, so that the winter frosts will pulverize the soil, and leave it in good shape for a grain crop and seeding with clover the following spring.

I would just add in conclusion that when stock raising is followed, and all the coarse grain raised on the farm is consumed as food, together with a quantity of bran purchased, there is no loss of fertility, but rather a gain, providing that clover is grown to supply the necessary nitrogen; and let it be remembered that in the cultivation of the soil the two chief requisites are to provide the soil with a sufficient quantity of animal and vegetable matter, and to have it made available as plant food.

UNDERDRAINING.

By Mungo McNabb, Cowal.

At the present period in agricultural history, when we are studying how best to produce a larger quantity and better quality of farm products, were we to ask ourselves what are the essentials necessary for the successful production of crops, we would answer drainage, tillage, and manure. The first place must be given to drainage, for everyone will admit that in order to grow crops successfully we must have a dry soil. There are people who will still assert that draining heavy clays will injure them, and to anyone who is unacquainted with the effect of drainage, it appears to be a contradiction to state that drained land is dryer in wet weather and more moist in dry weather, but experience proves such to be the case. The object of draining is not to get the water off the land, but to get it to pass through the land, so that the soil may retain what fertilizing properties it contains and what the soil does not require passes off through the drain. When passing through the soil the water leaves plant food, and the air is enabled to penetrate the land and act upon the vegetable matter therein, and render it available for plant food, while in undrained land the water is stagnant and fills up all the pores of the soil, and the land remains cold. The heat cannot penetrate the soil until the water is evaporated, hence we find that the temperature of drained land is higher than that undrained. Careful experiments conducted in England resulted in finding a difference of 7 ° in favor of the drained land. The advantages of draining are: it enables us to work the land much earlier in the spring. The advantage of early seeding is self evident in this country of short seasons. Experiments have shown a very large gain in favor of early seeding, compared with that sowed ten days later. The land drys more rapidly after heavy rains in summer, which allows the hoed crop to be cultivated more thoroughly, and the grain crops are not so liable to rust or blight. On drained soil crops are less liable to be injured by summer frost. An earlier harvest and a better quality of grain is another advantage. Where fall wheat is grown it is not so liable to be heaved by the action of the frost; a catch of clover is more likely to be secured, and liability to heave is almost entirely overcome. Tillage is rendered much easier on heavy clay soil, as nothing is more injurious to such than to work it in a wet condition. Manure gives a better result, and can be applied on the surface and its fertilizing properties washed down into the soil. In draining, *thoroughness* is essential. Every tile laid down should not only be of sufficient size and laid at sufficient depth for present requirements, but should have capacity and depth enough for whatever water will be brought through it in future. It is an excellent practice to use one size larger tile than we think absolutely necessary. A good outlet should always be provided. This may be an open ditch, but it should be of sufficient depth to allow the tile to discharge the water freely into it. Never have an open ditch where an eight inch tile will carry the water. The outlet should be secured with flat stones or a wooden box, as tile that are exposed will crumble from the action of the frost. Do not bring laterals into the main drain at right angles, but turn in the direction in which the water flows in the main drain. The junction may be either in the

side of the main, or, if depth will allow, the lateral may be laid on top (a hole being cut in the centre of the lateral and laid exactly above a corresponding hole cut in the tile in the main drain) and the water allowed to fall into the main. The joint should be carefully secured with pieces of broken tile. For lateral drains use nothing smaller than three-inch tiles. The depth and distance apart must depend entirely upon the soil; for heavy clay soil the depth should be less than three feet, and the distance apart from twenty to one hundred feet In digging it is an excellent practice in level land to plow with furrow each way and clean out the bottom with a shovel; this will remove seven or eight inches of the surface more expeditiously than by digging Only first-class tools should be used; half-round spades and scoops the proper size for different tile are essential. Extra care should be taken in levelling the bottom of the drain. At least one inch should be removed with the scoop in arranging for three inch tile (more for larger) in order that the tile may lay perfectly solid. Water should be used to get the bottom perfectly even. Tile will work perfectly in very level land if laid correctly; a fall of one inch to two hundred is sufficient if the work is properly done. In laying tile the operator first places one tile at the outlet and stands upon it, each tile is put down receiving a sharp blow from the heel of his boot, which drives it close up to the one previously laid. It is in quicksand that the beginner will meet with the most difficulty. These should be drained as deeply as possible. If the outlet will allow, and it is possible to reach a clay bottom at a reasonable depth, it is better to do so. The drain will accomplish more the deeper it is put. Select the dryest time of the year for such work. If the water is allowed to run off after each succeeding spading is dug out, there will not be much difficulty experienced. In laying, if unable to reach solid bottom, after the water has been allowed to run out, scoop the bottom carefully and throw in an inch of dry sawdust, and you will be able to lay the tile satisfactorily. Cover joints of tile with a tough sod. To ascertain if tile is properly laid, walk through the drain, stepping on each tile; if they remain perfectly solid you may feel assured that they are all right. The drain should be filled for the first six inches with surface soil, then plow in; use a long double-tree and put a horse on each side of the drain.

The prices at which tile are sold at present in this neighborhood, at the kiln, are as follows:

3 inch	$8 00	per thousand.
4 "	12 00	"
5 "	18 00	"
6 "	25 00	"

This is about twenty-five per cent. less than they could be purchased for some years, and is possibly less than they can be produced for in some localities. One thousand tiles will lay sixty rods of drain. Cost of digging and laying are from twelve and a half to fourteen cents per rod, with board, for ordinary draining, say four inch mains and three inch lateral. For quicksand and soils the cost would be greater. The percentages of profit that money invested in draining will return will vary in different soils. Cold springy soils will yield a much greater profit than clay soils, but on the latter I have always received a good profit on the capital invested.

FODDER CROPS.

By T. G. Raynor, B.S.A., Rosehall.

The value of a fodder crop depends largely upon two things—first, its composition; second, its digestibility. With regard to composition it may be said that all foods are composed of certain elements which produce flesh and muscle and are called flesh formers; and of certain other elements which serve to keep up the animal heat, enable them to do

work and lay on fat, called heat and work producers. Those fodders which contain most flesh formers are the most valuable, clover hay, pea straw, and such foods as pease, bran, beans, linseed meal, etc., and those which are valuable as heat and work producers, are the straw of the cereals, corn fodder, and such cereals as barley, corn and oats. The composition of grain remains about the same, but the fodder crops vary considerably according to the time of cutting and manner of curing. The digestibility of the crop also varies under similar conditions. In fact the farmer has almost the control of the fodder crop. One of the most important crops the farmer grows is clover. It is valuable as a fodder crop and as a restorer of lost fertility to soils. It feeds largely from the atmosphere and is a nitrogen gatherer, and from the subsoil it draws heavily for its food supply. In the decay of its roots and the mechanical action it has on soils it leaves it richer in the essential elements of fertility than before the crop was grown. One of the best means to ensure a catch of red clover is to top-dress the land intended to be seeded with farmyard manure in winter. In the spring get a good fine tilth by not pasturing; the first fall growth will serve as a protection against the spring frost and serve as a mulch for the second season's growth. To prepare clover for fodder, one of the best methods is to cut it when in full bloom. It may be cut in the morning, stir it with a tedder if heavy, rake up and put in small coils in the afternoon. Let it stand twenty-four or forty-eight hours. Two or three hours before housing open the coils into two or three bunches so that the wind may dry it. Clover hay has often been preserved in good condition by putting it in large bulk tightly packed, and each layer as it is put in thoroughly salted or sprinkled with air-slaked lime. This may be styled the silo system of curing. The principal losses in curing hay are, first, too much drying. The leaves dry much faster than the stalks and then fall off; thus the richest part of the plant in flesh-forming elements is lost. Second, exposure to rains or heavy dews. These steep the partially cured plants, washing out certain nutriments and making the stalks less digestible. The aim should be to cure rapidly, go no further than is necessary, and handle it as little as possible. One of the greatest faults in curing timothy hay, is leaving it too long before cutting, for when hay tends to maturity the stalks become woody in character and are, to a great extent, undigested by animals. The best time to cut it is when what is popularly known as the second blow is on it. For mixed grasses, as beaver meadow hay, the time to cut is when the predominating grass has reached the stage of full bloom. Too little attention has been paid to green oats as a fodder crop, especially for the winter production of milk. For this purpose the oats are cut when the grain has reached the milk stage and the straw yet quite green. It may be cut in the morning and hauled in during the afternoon of the same day, pack firmly in bulk with liberal applications of salt between the layers. The fodder would be improved by the addition of a few pease when sowing the oats, about one-quarter pease. This kind of green food should be worth at least $6 per ton, and a fairly good piece of oats should yield three tons per acre which would make the crop worth $18 per acre. If allowed to mature a heavy yield would be forty bushels per acre, which at 30c. per bushel would be worth $12 per acre less 8c. per bushel for thrashing, grinding, etc., which would reduce the value per bushel to 22c. or $8.80 per acre. The difference or $9.20 would be placed against the feeding value of the straw when allowed to mature. Corn fodder is a most important crop to grow, especially in connection with dairy farming. It is not of much importance to feed until the corn has reached the milk stage. One of the best methods to secure a good crop of corn is to thoroughly prepare the ground before planting, by getting a good deep seed-bed. Mark out with a corn-marker two ways and plant in hills from three and a half to four feet apart each way. Plant with a planter from four to five kernels in the hill. Just as the corn is nicely sprouted and coming through the ground, harrow it with a light iron harrow and harrow it two or three times afterwards until the corn comes up to the crossbars on the harrow. After this use a one-horse cultivator moderately deep at first but decreasing the depth every time afterwards, always being careful to cultivate the same way between the rows, in order not to interfere with the little rootlets any more than can be helped. If the cultivation be kept up once or twice a week as long as it can be cultivated, a good crop of corn will be ensured even in very dry seasons. Three or four stalks in the hill

are plenty. Grow those varieties which mature good ears and give at the same time considerable stover. The time to harvest it is when the ears have reached the glazed condition. It may then be cut and cured in the silo, in the stook, or between layers of straw. Take it all around, the silo is the best system of curing it, but good results are obtained in either of the other ways when put through the cutting-box and mixed with other foods. In mixing it with straw in a stack or mow, the feeding value of the straw is improved by soaking up some of the juice of the stalks. When cut up it makes splendid coarse feed. Any straw is greatly improved for feeding purposes by cutting it green, and the longer it is left after the milk stage is reached the poorer it is for this purpose. Good straw is preferable to poor hay. It varies in its composition according to the kind. Of the cereal straws oat is best, then barley, wheat and rye, in the order named. The soil and manuring affect its quality. The thicker it is sown the finer it will be, and the earlier it is cut the better it is for feeding purposes. Pea straw may be cut quite green and still the pease be matured all right for seed. If the pease are cut green the straw is quite valuable for feeding as it belongs to the same family of plants as does red clover, which is rich in the flesh forming ingredients. With the modern pea harvesting implements they may be harvested in this way quite easily. In any case a mixture of the coarse fodders and a liberal supply of mixed meal will give the best result for feeding purposes. It has been found by careful experiment that a full ration for producing milk should be so arranged that it would contain two and a half pounds of digestible flesh formers to twelve and a half or thirteen pounds of digestible heat and work producers, or one pound to five and a half pounds. It will be easily understood, then, that a mixture of foods having these proportions will give the best results.

SILO AND SILAGE.

By A. H. Christian, B.S.A., Brooklin.

It is hardly necessary in these days of advanced agriculture to explain what a silo is or what it is used for; it has been in use for a great number of years in some form or other. In the old countries, beet leaves and green fodders of various kinds were packed tightly in pits covered and weighted down to exclude the air, and thus they succeeded in preserving green fodder for some length of time in a more or less fresh condition. Gradually these pits became more common and extensive; the French spoke of them as silos, and the English have adopted their name, hence, we call any building used to store green fodder in, a silo. The silo is now becoming a necessity to the farmer who wishes to feed his stock economically and to the best advantage. The dairy farmer recognizes the silo as the best means by which he can procure a good flow of pure milk, when grass and other fodders are scarce, especially during late fall, winter, and early spring. The general farmer who wishes to winter his stock economically, recognizes the silo as his best friend, because he finds the silo facilities the saving of an abundance of green fodder in a wholesome and palatable condition. Not only so, but food preserved in this way is very convenient. Food, such as corn, can be more economically harvested, stored, and fed out, by means of the silo than by any of the ordinary methods. The silo of the present day is, therefore, of economic value to the modern agriculturist.

The structure.—The structure of a silo is a very important question, and one we will not attempt to answer *definitely*, because there are various methods of building them and at various prices. Therefore, we advise the party contemplating building, to visit as many as he conveniently can, noting the advantages and disadvantages of each. He will then be able to decide what will best suit him. We have, at present, rectangular, square, round and octagon silos, all or any of which may be built of wood, stone, brick or cement.

Preference.—I prefer the round silo. It can be built with much less material, and still be much stronger than either the rectangular or the square silo, but requires more skilled labor. Cement silos give good satisfaction, and they possess great endurance, if properly built.

Filling the Silo.—The fodder usually used for filling the silo is some of the early maturing varieties of western corn. It is necessary to have the fodder as nearly matured as possible, but not exactly ripe, in order to have the best ensilage. Clover, lucerne, rape, rye, and many other green fodders may be used for ensilage; but there is difficulty in excluding the air from hollow-stemmed plants, such as clover, rye, and lucerne. Cutting or shredding the fodder before elevating it into the silo greatly facilitates the work of filling, and also makes it more convenient to remove. While filling the silo, care should be taken to keep the fodder well spread, and tramped firmly around the sides, especially at the corners. These are the places where the ensilage first spoils, as there is not pressure enough at these points to exclude the air. Having once commenced filling our silo we should continue the process until the silo is full, not allowing a day or two to pass and then start again, or we may have some mouldy ensilage where the top is allowed to dry out and is not well moistened again with water. This continuous filling seems to give the most satisfactory results, thus allowing the ensilage as little time as possible to heat. Well-matured fodder should not be allowed to wither in the field after it is cut, before being hauled to the silo, or it may become too dry to pack well. If it should of necessity have to dry out in this way, moisten well with water while filling. If well-matured fodder be immediately hauled and put in a good silo, the result will be comparatively sweet ensilage; but if the fodder drys out, or is put in with excessive moisture, sour ensilage may result. Having filled the silo, extra weight or pressure is not necessary, but tramp the top well, and in the course of two or three days add considerable water and then leave it to allow a dense mould to form over the top which will practically exclude the air, and only a few inches of silage will be spoiled. Some recommend covering with chaff to save this ensilage, but the chaff is not really necessary, as only from four to five inches will spoil without it and nearly as much will spoil if chaff be added. Having the silo thus filled and completed it may remain for six weeks or six months as occasion requires. Some commence to feed immediately; in that case, covering is not necessary and there is no waste. In removing the ensilage from the silo, it should be removed from the whole surface at least every forty-eight hours, and in removing leave as smooth a surface as possible, and thus expose as little as possible to the air. Only sufficient for a day's ration should be removed at a time, because when once loosened and exposed to the air, it immediately begins to heat and will soon decay. If the surface of the silo be too large to go over properly every day, a small piece may be cut down with a straw knife, but it is better to have the silo deep enough to allow a small surface, the greater deepness affording a greater pressure, and better results will be obtained. Sour ensilage is largely due to immature fodder, or if properly matured and it receives excessive moisture, such as heavy dews or rain, while being hauled in, it is apt to sour.

There is no more wholesome and palatable food for stock than good ensilage. It affords a cheap productive food for milk cows. It is a cheap, healthful, appetizing and invigorating food for young stock and store cattle, and may be fed with good results to horses and sheep. Ensilage should always be fed in conjunction with other coarse fodders in order to obtain the best results.

The following table gives the composition of corn silage and clover silage, showing the percentage of the different food constituents, compared with those of clover, hay and and oats:

COMPOSITION TABLE.

	Water.	Ash.	Protein.	Fiber.	Carbohydrates.	Fats.
Clover ensilage	72%	2.6	4.2	8.4	11.6	1.2
Corn ensilage	79%	1.4	1.7	6.0	4.1	.8
Clover hay	20.9%	6.6	11 5	24.7	33.0	3.3
Oat grain	11.0%	3.0	18 8	9.5	59.7	5.0

We see by the above that ensilage contains a large percentage of water. We cannot tell just what benefit this water is in relation to the food value of the fodder, but it is quite evident that it is of more economic value than is that which may be added to dry fodder. To show the feeding value of corn ensilage as compared with green fodder corn, and field cured fodder corn, we give below a table taken from the American handbook, a digest of experimental station work.

The Pennsylvania Station (Report for 1890, page 118) states as the result of actual estimate that, "a good average crop has produced with us from one and one-third to two and one-quarter times as much food per acre as a good hay crop." Concerning the amount of food furnished when the corn is ensilaged and when it is field-cured, the Pennsylvania Station (Report for 1889, page 113) estimates the amount of digestible food nutrients in silage and in field-cured corn fodder from one acre. The figures were based on actual yields of corn, and on digestion co-efficients found in trial with steers. The results are here given :

DIGESTION INGREDIENTS IN FODDER CORN FROM ONE ACRE.

——	Green fodder corn.	Ensilage.	Field-cured fodder corn.
	lbs.	lbs.	lbs.
Albuminoids (or flesh formers)	184.	82.	133.
Non-albuminoids	67.	151.	69.
Carbohydrates (starch, sugar, etc)	3,947.	3,164.	3,030.
Fat	153.	263.	156.
Total digestible	4,351.	3,660.	3.388.

These amounts are equivalent to the amount of digestible food material contained in from three to four tons of average timothy hay.

THE CULTIVATION OF CORN.

By Robert Thompson, St. Catharines.

Corn-growing is one of the keystones in the arch of successful agriculture. Firstly, because of the important place it fills in the rotation of crops and the thorough cleansing of the ground necessary, which is as effectual as a bare fallow. Secondly, because as a fodder and grain crop it can be grown at a profit. It also supplies our farms with a cheap, succulent, and nutritious ration for our stock, whether used as ensilage or by saving the grain and curing the stalks. Corn will do best on a clover sod, but will do well on any sod, although I would not consider it safe to plant on sod more than three years old if there is any danger from cut worms. Another good plan is to seed down the previous crop with clover, and allow the clover to grow as late as possible in the spring before plowing. In some sections, especially on light warm soil, this can be left until from the 20th of May to the 1st of June, and the young clover will have attained a good growth, and the soil will be well filled with root; this should be plowed under as shallow as can be well done, and enough soil secured to make a nice fine mould over the surface of the field. Roll immediately after plowing and harrow enough to secure a fine surface. Plant shallow, as corn is a surface feeder and will not succeed if planted deeply. The clover soon commences to ferment and decay, furnishing the young corn with the plant food it requires, also keeping the soil moist and loose. Corn should be planted in hills at least three feet six inches apart each way, and from three to four grains to the hill. This is sufficient to give the best results, as hills three and a half feet apart, and three good stalks to the hill, will give us 100 bushels of ears to the acre, and the stalks

will also store up more sugar if given plenty of room to develop. By planting in hills we can do the most of the work with the horse and cultivator as as the corn grows larger. Cultivate shallow and do not be afraid of hurting the corn by working it too late. Keep the cultivator going, even when the tassels appear; if there be a crust formed after a rain, use a short whiffletree and make a light muzzle for the horse out of wire, for if he reaches for a bite he is sure to step out of the row and on a hill of corn. Never hill up the corn more than to throw a little earth up to the hills when the weeds are very small and thus smother them; the latter cultivating will level all down again. If for the silo the best time to cut is when the corn is glazing, and this is also the best time to cut it if we intend to husk the ears and save the stocks for dry fodder, as at this stage there is sufficient sap in the stalks to thoroughly mature the grain, and we have the very best stalks for winter fodder. Every day the crop is left uncut after the ears are glazed, we are wasting the value of our fodder. One of the many causes for the failure in securing good ensilage is that corn is put into the silo that has been planted too thick, not cultivated sufficiently, and then cut and stowed before the ears have come to the glazing stage. If you take a stalk from the field next season out of a row where it has been planted thickly, take another out of a hill with three stalks in it when the ears are just glazing, break the two stalks, chew them and compare. You will find the first watery and almost tasteless, while the other will be sweet and pleasant to the taste. Great care should be taken in selecting the seed. If to be taken from our own crop, only save the best and most perfect ears, and see that they are kept perfectly dry. Before shelling the small ends should be taken off, also the ends of any butts that are rough or uneven. If the seed is to be purchased, procure from some good reliable seedsman. Corn is one of our most delicate seeds, and is very easily damaged by moisture. The amount of seed required to a hill is so small that we cannot afford to risk planting poor stock. Some, I find, say they are troubled with the crows digging up the young plants. Here is a simple and effectual remedy; take a half bushel of corn and place in an old vessel, pour enough boiling water over it to moisten, then drop over it two or three tablespoonfuls of boiling coal tar, stir the corn rapidly and continue until there is a thin coating of tar over all the corn. If the whole has been well stirred this amount of tar will be found sufficient, and no crow will ever pull up more than three grains before he will leave it in disgust. Corn should not be planted too early; if the season be cold the seed is liable to spoil, and if it does grow the growth will be weakly and yellow, while the corn planted later, when the natural heat is in the ground, will sprout, grow quickly, and in a short time will overtake that earlier planted. It will mature in ninety days, and by planting in hills the crop can be cut much cheaper and easier than if planted in rows. I can give the cost of growing ten acres of corn at what it actually costs me. The following is an average for the last six years, taken from cost and yield. Cost of growing and harvesting ten acres of corn:

Rent or interest on value of land, at $4 per acre	$40 00	
Allowance for manure taken from soil, at $8 per acre	80 00	
Plowing, at $2 per acre	20 00	
Harrowing and rolling	6 50	
Marking each way	2 00	
Seed	1 00	
Planting	4 50	
Cultivating seven times	16 50	
Boy to pull the few weeds left by cultivator	2 00	
Cutting, at $1 per acre	10 00	
Husking 1,000 bushels, at 4 cents per bushel	40 00	
Hauling in corn to crib	10 00	
Hauling in stalks	7 00	
		$239 50
Value of Crop Grown:		
100 bushels, at 20 cents per bushel	$200 00	
20 loads stalks, at $2.75 per load	55 00	
		$255 00

Leaving a balance or profit of $15.50 after paying all labor and expenses. An equally

good sheet could be shown in favor of growing the corn for ensilage. If I were growing corn to cut and feed to cows during the dry season, in August and September, I should plant some of the sweet corns, such as the Crosby, for first cutting, and Excelsior for later. To summarize, secure good seed, plant on a clover sod or clover seeding when the ground is warm. Cultivate often and late, cut when corn is just glazed, and you will be successful and have a clean field.

CORN AND THE SILO, OR MY EXPERIENCE WITH ENSILAGE.

By George Donald, Kilsyth.

I have read that the horticulturists of Japan have a marvellous skill in the cultivation of flowers, and by artificial means produce wonderful developments in size and color. When these plants are purchased, the stimulus they have received enables them to maintain themselves for a season, but in the course of a year they deteriorate, and at the end of two years, become worthless. The secret of their development is jealously retained by the cultivator from whom they are purchased, and out of his hands there is not only no progress, but the excellency he has given the plant is not maintained. This is the Japanese way. Every step in agricultural and horticultural progress is a "trade secret." This is not our way, however. Here every horticulturist, farmer, live stock breader, or other specialist cheerfully gives the results of his experience for the benefit of his fellows, and in turn profits by theirs. As to which is the better and more generous plan and the most conducive to agricultural progress, there can be no question. "There are none of us who do not owe the large bulk of what we know to the efforts and collected experience of others. It is, therefor, every one's duty to pay the debt by contributing to the extent of the ability to the common stock. Drink deep of the gathered experience of others; profit by their successes and failures, but contribute to the general stock of knowledge, adding to it the facts that have fallen within your own experience."

I feel myself so much indebted to the Farmers' Institutes, to the Experimental Farms at Ottawa and Guelph and other kindred Institutions, that I am here to try to pay some of the debt I owe, by giving my experience in growing and feeding corn. I may say that preserving corn in the silo is no longer an experiment. It has long passed that stage; it is an undoubted success and is a sure way of having a bulky, succulent and cheap food for cattle, and I do believe there is no other *one* thing which would tend so much to the prosperity, thrift and happiness of the farmers of Ontario as the growing and judicious feeding of corn. But I will commence at the beginning. Previous to 1890 I had been reading a good deal about the new method. I saw a notice of a book by Professor Cook, of the Michigan Agricultural College, who not only understood it from a scientific standpoint, but had actual experience from growing it on his farm for three years before. I got the book and read it carefully, and had so much faith in his teaching and in his experience, that in 1890 we sowed five acres of M. S. S. corn, which grew splendidly. We got our silo built, which is eighteen feet square, and twenty feet high, and we got our first crop in all right. We had about eighty tons, and fed it to the cows and all the young cattle and they ate it fairly well, but we were rather disappointed. We had to coax them with a little meal, but they were not quite so keen for it as we expected they would be However, at the Farmers' Institute meeting that winter, Mr. D. E. Smith, I think, of Brampton, gave us his experience. He had sowed the same kind and had had the same trouble. It was too acid, and for the two years previous he had been sowing Compton's Early and the Longfellow, two varieties that matured well but did not give the bulk the M. S. S. did, but the quality was much superior. Thanks to the Farmers' Institute we reaped the benefits of his experience, and in 1891 we sowed "Compton's Early" and "Longfellow." When harvest came on, it was much better matured than the previous crop, and in the winter the cattle ate it well. In 1892 we sowed Compton's Early again and had a magnificent crop, the best we have ever had. We fed it to the cows and young cattle. In 1893 the season was dry and our crop was not

heavy but was splendid feed. In 1894 the seed time was very wet, succeeded by very dry weather, and our crop of seven acres was light. We used two acres for fall feeding, as there was no pasture. The other five acres we put in the silo, about forty tons, just eight tons to the acre. That winter, in January, 1895, my son went to Tara to the Farmers' Institute meeting and heard John McMillan, M.P. for South Huron, give his experience with feeding steers. Thanks again to the Farmers' Institute, we profited by his experience. We cut up all our straw that winter and mixed it with the ensilage, and fed it to the fattening cattle as well as to the rest, with good results. So much so that my son said what we learned there was worth $50 for that season. You will agree with me that was a pretty good investment. This brings us down to the present season 1895. We sowed seven acres which was a good crop, eleven tons per acre. One acre we kept for fall feeding which left us six acres for the silo. When we opened the silo we had about sixty-six tons for winter feed. We commenced to feed corn on the 14th of November, and have fed it three times every day to the cattle. The grown cattle get about thirty pounds, and eight pounds of cut straw each. We are using six hundred and fifty pounds of corn at the present time, and we expect to have enough so feed until the grass comes. I will now give you the cost of growing the crop of 1895, also the cost of cutting and putting it in the silo :

Cost of growing the crop,—

Rent of land (six acres) at $2 per acre	$12 00	
Taxes on the same 25c. per acre	1 50	
Two plowings at $1.50 per acre each time	18 00	
Harrowing three times at $1 each time	3 00	
Rolling three times at $1 each time	3 00	
Hauling and spreading manure four days	15 00	
Seed corn	3 00	
Sowing seed with drill half a day	1 25	
Harrowing corn after it came up, twice	2 50	
Scuffling corn three times at $2 each time	6 00	
Hoeing six days at $1 per day	6 00	
		$71 25

Cost of cutting, hauling and putting in the silo,—

One man and team four days at $2 per day	$ 8 00	
Twenty-three days work of man at $1 per dry	23 00	
One man and three horses on horse power	10 00	
For use of horse power and corn cutter	10 00	
		$51 00
		$122 25

The cost per ton of growing and putting in silo is $1.85 ; the actual cash paid for cutting and putting in silo is $20, or 30c. per ton.

We will now take the cost of feeding steers. Mr. McMillan gives his rations,—

18 lbs. ensilage	1⅜c.
9 " straw at $3 per ton	1⅜c.
6 " hay at $5 per ton	1½c.
8 " meal at⅜ per lb	6⅔c.

or 12c per day for the whole feeding period. Mr. Rennie, farm superintendent at the Agricultural College, puts the feeding value of corn at $2 per ton, and turnips at $2.50 per ton, or 7½c. per bushel. November and December, say sixty days, the rations we gave the steers for these two months were,—

30 lbs. of corn	3c.	
8 " chaff	0c.	
22 " turnips	3c.	
	6c.	$3 60

January and February, say sixty days, the rations,—

30 lbs. corn	3c.	
8 " chaff	0c.	
30 " turnips	4c.	
6 " meal	6c.	
	12c.	$7 80

March and April, sixty days, same rations,— $7 80

May, thirty-one days,—

30 lbs. corn	3c.	
30 " turnips	4c.	
10 " hay at $15	7½c.	
6 " meal	6c.	
	20½c.	$6 35
		$25 55

Making the cost 12c. per day for 210 days from November 1st to May 31st,

I have given you our experience, you can each draw your own conclusions. Under the old system we used to reckon that it cost us about $31 to finish a steer for spring; the difference here would be about $6, which would make ½ cent per pound on a twelve hundred pound steer. If in these days of low prices and keen competition we can by judicious feeding reduce the cost of finishing an animal by half a cent a pound, that is just as good as if we got half a cent more in the selling of the animal. The most of us are getting too old to go to school, but there are none of us too old to learn; in fact we are here to day in a practical school experience, seeking to get knowledge. The wisest teacher that the world has ever seen, said "He that heareth my words and doeth them, is like to the wise man who built his house upon the rock," so that it is not what we know, but what we put in practice that benefits us.

THE ROUND (STAVE) SILO.

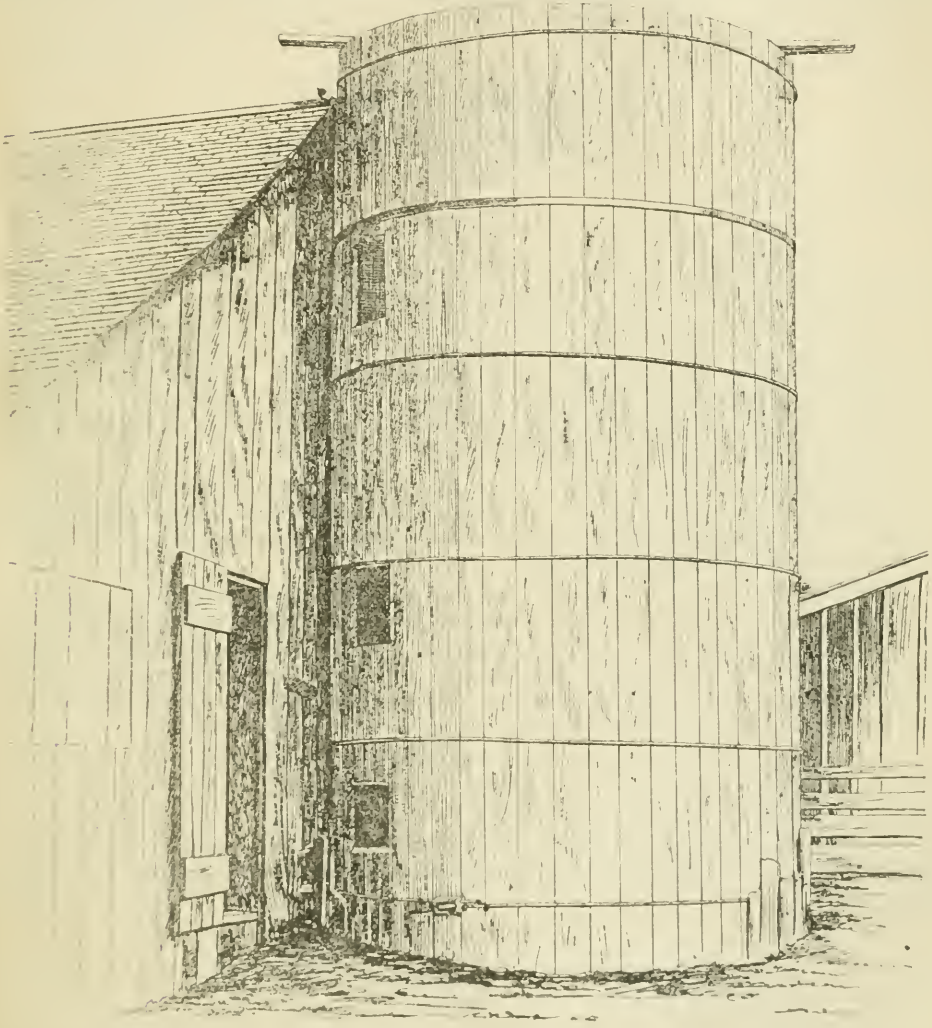
Jos. E. Gould, Uxbridge

At the request of the Superintendent of Farmers' Institutes I have had a photo taken of my silo, also a drawing of the block used in tightening the hoops. You will see by the illustration that the silo has no roof. In advocating the building of these silos at Institute meetings I have pointed out that, while a round silo is unquestionably the best, a stave silo is not the best kind of round silo. Inasmuch, however, as they answer all practical purposee I have urged the building of them as they can be built so cheaply as to come within the reach of almost every farmer. They are particularly invaluable to tenants whose landlords will not help them, as they can be taken down in two hours and taken away when the tenant's term expires. A sixty-ton silo can be built for from $40 to $60, depending on the price of lumber in the locality. My large silo (one hundred and forty ton) cost about $75.

As to the advantages of the silo it would seem almost superfluous to mention them here, still the actual experience of men who have used them should carry weight. So great is my faith in them, than I would build a new one for each crop if it were necessary, rather than be without. I had a heavy crop of corn last year, and when my largo silo was filled, knowing that I was going to be short of other fodder, I gave an order to the proprietors of the planing mill for lumber to build another, and inside of twenty-four hours we were filling it. The following experience during the last winter will illustrate the grounds of my faith. The summer of 1895, in this locality, was unusually dry. The crops (except the corn) seemed to be parched up. The result of a crop of twenty acres of hay was about eleven tons, thirty acres oats and sixteen acres barley occupied nine hours' threshing, and thirteen acres of corn yielded about one hundred and sixty tons. With this crop we faced the winter with fourteen cows, four spring calves, and

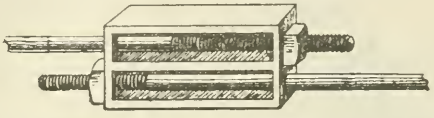
sixteen head from eighteen months to three years old—in all thirty-four head besides six horses. We fed everything ensilage; all they would eat. Cows got ground barley and oats with bran added. Result: cows kept up a good flow of milk, and the young cattle came through looking fine and in good health. The corn did it, and I have no doubt many owners of silos could give equally as good testimony.

In building any kind of a silo it is desirable to get as much depth as the situation will permit (up to 35 feet), and thereby reduce the surface exposure as much as possible. It should not be less than twenty feet. Mr. Orchard, Seagrave, has one sixteen feet in



diameter, twenty-four feet high, which gave splendid satisfaction. If twenty feet, and plank can be got that length, two inch plank any width up to ten inches wide will do in a silo sixteen feet in diameter. If the planks are not long enough any mechanic can put up the silo by splicing the plank. They would all have to be the same width; some in the cut are spliced. The plank must be jointed but not *bevelled* on the edges. Foundation may be of stone if convenient. If not convenient make a rim of double inch cedar boards, like the rim for the curb of a well, and of the size intended to be built. Bend the first hoop putting the nuts on the extreme ends of rods or hoops, (see cut

of block), and lay two inches from the bottom by temporary blocks. Bend the fifth hoop and raise it twelve feet from the bottom by means of stays and plumb over the lower hoop. Raise the first plank and set on the foundation inside the hoops. Plumb the edge; drive a four inch wire nail through under each hoop and bend round, and the plank will stay in its place. Set up the planks all the way round until the circle is complete. Tighten the hoops already on; put on the three between the two above, when the silo will be ready for use. The hoops are made of five-eighth round iron, the threaded ends being three-quarters. The blocks may be hardwood (end pressure) or cast iron. The silo may be let in the ground if necessary without danger from water. The one shown in the photograph is placed two feet below the surface. In such a case, pieces of old lumber should be put round the outside to



"Block, 5 inches long, 3½ inches wide, 2 inches thick. May be made of hardwood, (endways) or cast iron, or can be bought at any hardware store."

prevent the earth, banked up to shed surface water, coming in contact with the staves. (The boards were removed from the front when the photo was taken). When commencing to fill, do not be alarmed if you can see through the cracks; the damp silage will swell the cracks tight in twenty-four hours. Beware of knot holes, or places in the edges of the boards that do not fit; tack a piece of tar paper over them. Try the hoops after the silo is filled a few days, and if too tight slacken the nuts, or there is danger of bursting the hoops. The only bottom required is the earth itself. It should be banked a little on the inside to keep the air from coming in under the planks.

How to get the silage out.—Cut three holes at convenient distances in the side, as shown in the cut, about eighteen by twenty-four, bevel the edges on the inside, make doors with beveled edges to fit, (do not put them on hinges) put them in place and tack a piece of tar paper over the whole door.

Will it freeze? Yes, in very cold weather and in an exposed situation, sometimes to the thickness of four inches next the staves. What effect has the frost? When it thaws out the cattle eat it as readily as the other. We take an axe sometimes, knock it down and put it in the feeding trough when it will thaw out in twenty-four hours. What the chemical effect of the frost on the silage may be I am not prepared to say. From experience in feeding I believe the frost does not injure it.

A roof though an improvement is not an absolute necessity, and adds to the cost. All the rain that will fall upon the silage will not injure it. In the winter put some poles on the top and cover with pea straw to keep out the snow.

The following table will give the capacity near enough for practical purposes. It is safe to estimate fifty cubit feet per ton and four and-a-half tons for each animal during winter:

Diameter of Silo.	Height of Silo.			
	20 ft.	22 ft.	25 ft.	30 ft.
	Tons.	Tons.	Tons.	Tons.
10 Feet	31	34	40	47
12 "	45	49	56	65
14 "	63	68	77	90
16 "	80	90	105	130
18 "	100	110	125	150
20 "	125	135	155	185
22 "	145	160	180	215

THE MANAGEMENT OF FARM LABOR.

By John I. Hobson, Mosboro'.

Unquestionably there is nothing else connected with the business of farming which gives so much annoyance or which is as difficult to get on a satisfactory basis as farm labor. There are various causes which tend to bring about this state of things, and perhaps none more so than the unreasonableness of employers.

In dealing with this question at this time, I purpose doing so from a strictly practical standpoint based on my own experience as an employer of labor and from knowledge acquired while judging the prize farms of Ontario for some twelve years. To simply get up a theoretical essay would be an easy matter. It would not be difficult, theoretically speaking, to show that the hours of labor are too many in every industrial calling, and that, in these days of rapid transit and phenomenal advance in labor saving machinery, it would appear to be better for men to work fewer hours and have the work distributed over the whole year. It would appear that the world could produce enough for its wants if every man worked but half the number of hours of what is now considered a working day ; and what beautiful pictures we could draw of how the other half of the time might be spent. But unfortunately on the farm of this country (and it is a good, rich and fertile land), it seems to be necessary for the farmer and his men to put in each day a solid day's work all the year round, and even then it is difficult to hold one's own amidst the keen competition. At this time, when there is evidently a growing socialistic tendency, brought about in no small degree by the vulgar aggressiveness of wealth and the enormous fortunes built up, not unfrequently in a single generation, often from the hard work of the toiling masses, at a time when the relations between capital and labor have become so tense that a very little extra strain at any time may bring about the most serious results,—when these conditions prevail (conditions which are likely to be intensified in the future unless something can be done to lead up to more satisfactory relations between employer and employed), it is a matter of no small importance for farmers to consider whether, in their line, something more cannot be done to put the labor question as it affects the farm on a better basis.

We occasionally hear a good deal said on the theory of co-operative labor. That, as applied to the farm, is impracticable and does not as a rule work very well when brought into application in any other industry. Mr. Gladstone once said, when called on to speak on this question at a meeting, that he could not fancy anything more just or fair, and that certainly the system would work admirably in years of prosperity, but in years of adversity it would be altogether a one-sided arrangement.

We might go on to speak of the moral and social relations which should exist between the employer and employed on the farm, and show how much it would be to the interest of both parties in the end if the employer would never ask or expect his men to do more work than was right and reasonable, and if, when hiring, he would, in all cases be ready and willing to give a fair and just remuneration for services to be performed, and would try to carry out a system of farming that would give employment to his men in the slack part of the year. We might speak of what should be the line of conduct followed by the employed, and say that he should not take undue advantage of the employer because of a temporary scarcity of labor, and that he should never shirk his work, and especially be faithful in performing his duty whether his employer is with him or not, and in all cases be ready to put forth an extra effort at a busy time. Now this sort of moralizing is all very good, but we have in our mind's eye more than one employer who can and does talk eloquently in this strain, and in his own practice is an outrageous "nigger driver," and we can well remember in days gone by having in our employ men who were very good in a way and who were so strict in the observance of the Sabbath that it required no little persuasion to get them to do work that was absolutely necessary. In cases of that sort our acquaintance was of short duration. We might moralize on what should be the social relations existing between the farmer's family and the unmarried hired man when board-

ing in the house if this custom is followed. How pleasant and social-looking it would appear to be when the farmer and his men were smoking together in the back kitchen in the evening discussing the plans for the next day; and we might speak of the refining influence of the family when the boys and girls joined the group around the kitchen stove in the winter evenings talking over the gossip of the neighborhood. Then we might speak of the feeling of equality, which the system so generally followed in this country of boarding the hired man in the farmer's house tends to create. It may be said that there is a tendency for the employer to feel that he, being the party to whom services are to be rendered, is rather above his hired man; but then on the other hand to offset that and to keep up that grand feeling of equality, the farmer's wife and his daughter have too often to be the servants of the hired man, to wash and mend his clothes, and it is not uncommon to clean his boots as well. This is no imaginary picture; the writer has known of cases of this sort, and has heard the poor hard-worked farmer's wife complain that the hired man would never wear his Sunday shirt without being laundried. She did not say how often her husband had to wear his. While it is true that it is very desirable that some change be brought about so as to place the relations between employer and employed on the farm on a better footing, yet it cannot be questioned that on very many farms the existing relations are all that can be desired, or at least as nearly so as could be reasonably expected. This state of things, however, is the exception.

I will now settle down and carry out the purpose aimed at in taking up this subject, and that is to give a short article dealing with my own practical experience as an employer and stating what I have found (having due regard to the conditions under which I have been farming) to be an excellent system to follow; and it may further be said that the highly satisfactory results in my own case, after many years' trial, have been found to be equally so by many of the most prominent and successful farmers of Ontario. I am referring to the employment of married men living and boarding in their homes. The writer well remembers when in company with the Hon. Charles Drury, now Sheriff Drury, of Simcoe, spending a day on the farm of the late J. B. Carpenter, of the county of Norfolk, one of the shrewdest and best farmers in Canada—a man who had made himself wealthy by successful farming. We found him employing altogether married men, each living in a plain but neat house with a fair-sized garden attached, and in addition each family had the use of a cow. On this farm there was no boarding of men in the house. The farm was a large one, requiring four men all the year round, besides extra help in busy times. Mr. Carpenter had been following this system for a number of years, and would not on any account have gone back to the old plan of boarding the men in the house. Since that time, a period of fourteen years, the writer has carried out this plan on his own farm, for the first three years partially, and for the past eleven, although employing a good deal of labor, no men have been boarded, and nothing would tempt me to go back to the former way of doing. Farming has been quite as profitable, making due allowance for the extreme depression of the past few years. There has been positively no friction. The men are made comfortable, and as a matter of fact for fourteen years no married man has left my farm to hire with anyone else—all have remained until they have laid by enough money to start in some way for themselves; and one now with me is earning money to pay the balance on a house and six acres of land which he bought two years ago. During the thirteen years that the prize farm awards were made I inspected farms large and small in every part of Ontario, from the province line of Quebec to the Detroit river, and in carrying out the work there was no one thing more closely considered than this one question of farm labor as it affected the operations and the profits of the farm and the home life of the dwellers there, morally and socially, and I say it advisedly, from extended opportunities of acquiring knowledge in that way, that, generally speaking, on large farms or moderately large ones, the employment of married men boarding themselves is altogether preferable to boarding men in the house. Outside the question of profits there is the all-important consideration of home life. This home life cannot by any possibility be what home life ought to be when the farm house is nothing better than a boarding house. It is not too much to say that the future life of many a bright boy or girl in this country has been a failure through too little attention having been paid to their yearning for home comforts.

Before dismissing this branch of the farm labor question, it is well to say that to obtain the best possible results from operating a farm in this way, it is very essential that one of the first things to be aimed at is to employ none but good men, and then to do everything in reason to make their lives comfortable. Let us ever remember that it is a duty as well as a privilege to do something to make the lives of others a little happier. I would say to those farmers who have to employ labor, you have no right even if you have the power to do it, to make your men work from early morning until dark at night, and further, if you look at it from no other standpoint than personal gain, it is a very decided mistake; and incidentally it may not be amiss to say, be sure and do not ask your sons to do what no reasonable man would expect his hired man to do. Many a good boy has been driven from home by that sort of treatment.

Then again it is a matter of the first importance that the men serving should be well treated. Their houses, if not large, should at least be made comfortable. The garden attached should be large enough to enable them to grow vegetables for their own use, but not so large as to take too much of their time, and if a few apples and some of the smaller fruits can be grown on the ground they would be more appreciated by them than by those who can better afford to buy them. A cow is an almost indispensible necessity to a family on the farm, and arrangement should be made to have it pastured, but on no account have it wintered by the farmer. It is too severe a test on frail human nature to allow a hired man to feed his cow from his employer's meal box. To my own knowledge the trouble arising from this cause alone has in more than one case led farmers to give up keeping married men in the house. A noted breeder and importer of Shorthorns, now deceased, told me that his stockman would buy two and sometimes three lean cows in a season, selling them off when fat. Patience at last gave way, and, although a first-class man, he had to send him adrift.

The faculty of getting on smoothly with hired men on the farm is well worth cultivating. My own experience leads me to know that if you engage good men there is little trouble in keeping them, if we, as employers, do our part. Let us ever remember that it is our duty to try and make them as comfortable as conditions will admit of. If we do so, we may expect faithful service, and from good men we will get it. Let the rules be strictly laid down and adhered to, and on no consideration keep a man an hour after his time is out, if he has at any time given you one word of impertinence.

However, owing to the conditions in which most farmers are placed, the larger number of farm hands are unmarried men who are boarded in the house, and this is most likely the state of things which will continue for a long time to come. It is a difficult question to deal with, and, as far as both employer and employed are concerned, is in a most unsatisfactory state, largely arising from the fact that there is comparatively little employment for one-half of the year; and just so long as the farmer has to look out for new men every spring, and good men find themselves discharged at the first sign of winter, and often before, it will remain so, and no amount of philosophizing will put it right. How to rectify this matter it is difficult to see Conditions change so rapidly in this age that what is the best system at one time might be all wrong in a year or two. A few years ago stock farming along its various lines was highly profitable, and where properly carried out gave employment all the year round. But now, with export cattle at $3.50 per one hundred pounds, butchers' cattle almost unsaleable, and dairy products declining, pork away down, and horses unsaleable at almost any price, there is no use theorizing about farmers keeping men profitably employed all the year. The best that can be done now is to farm well under any condition of the market, but by all means keep down expenses.

It would appear that about all that can be said on this phase of the farm labor question, is, that the best generally is the cheapest. Try to get good men, and where conditions will admit of it, have profitable employment the year round, and use them as you would like to be used if you were in their condition.

WARMING AND VENTILATING STABLES.

Prof. A. E. Shuttleworth, B.A.Sc., Ontario Agricultural College.

Farm animals should be comfortable and in sound health to yield a profitable return to their owners. Both their comfort and health are affected by the temperature and the purity of the air to which they are exposed. Stabling animals brings them under artificial conditions; and here it becomes necessary to regulate the atmosphere of the stable, keeping it moderately warm and sufficiently pure for the comfort and the health of the animals. A temperature of 60° F. is considered about right for cattle. Much more than this may cause prespiration, and much less cause the consumption of an unnecessary amount of animal heat. Horse stables may be kept at 65° F., and sheep pens at 55° F., but the air for all animals alike should be pure or fresh always.

Our winters are usually cold, and at times severely cold. It is the severest cold, that, in building, we aim to exclude. A stable thus warmly built is usually much too warm in moderate winter weather where windows and doors are usually left open. This is an unsatisfactory method of regulating the temperature of the stable. It is invariably accompanied by draughts, and frequently, when there is a decided fall in the outside temperature after the stables are left for the night the animals are severely chilled.

It is just as difficult to regulate by doors, windows, hatchways, etc., the ventilation of stables as the temperature. Exchange of air is absolutely necessary, even during the coldest weather, but during such weather both change of air and warmth of stable cannot be secured at the same time, when the fresh air is admitted directly as through opened doors, windows or hatchways. In order to exclude the cold, the usual practise is to suspend ventilation until the cold spell is over. While ventilation is thus suspended everything becomes sweatty and wet, doors and windows are deeply frosted, and the atmosphere is exceptionally foul.

The following cuts aim to illustrate a simple, cheap and practicable method of ventilation which secures a constant supply of fresh air and a regular temperature in stables.

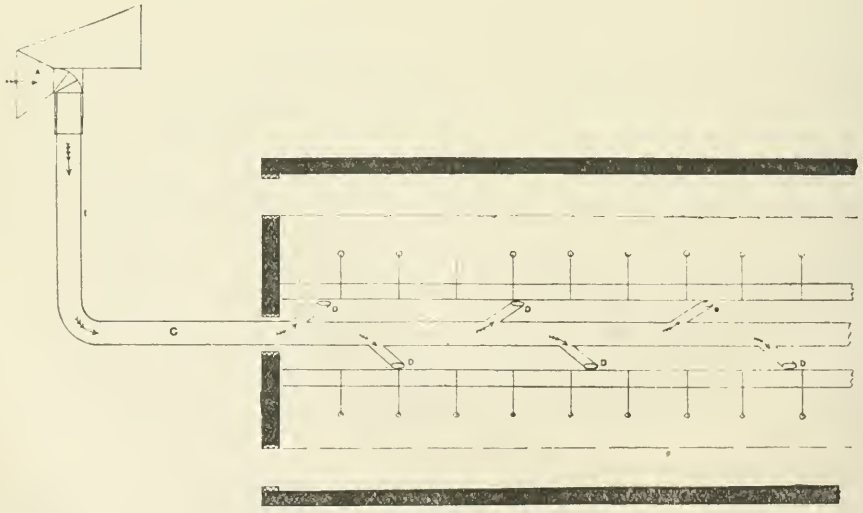


Fig. 1. Scale—16 feet to 1 inch.

In introducing fresh air, it is not enough to bring it in in one or more large streams or currents. The introduced air must be distributed. Figure 1 is a ground plan of a stable showing how the fresh outside air enters the *fresh air flue* at *a*, passes down

through *b*, and along *c* under ground below frost and a distance of 100 feet, when it rises into the stable at sub-flues marked *d*. During its passage under ground the air loses its chill. Cowl *a*, fig. 1, is constructed to revolve, the mouth always facing the winds, insuring a constant supply of fresh air in the stable. The upright, *b*, and cowl, *a*, should be constructed of galvanized iron, but the underground flue, *c*, may be made of concrete. Galvanized pipe of 18 inch diameter, which should be large enough for average farm stables, costs about twenty five cents per foot. Concrete for laying the underground fresh air flue is made of cement and screened gravel, containing a sprinkling of sand, mixed in the proportions of one barrel of cement to one cubic yard of gravel. The cost, including cement, gravel, labor, etc., is about forty cents per foot, but the actual outlay need only be about twenty five cents per foot where gravel can be obtained at home and the farmer does his own work.

The fresh air rising from the underground flue through the side flues, *d*, enters the spaces, *a*, fig. 2, behind the facial board and under the projection of the manger. Delivered here in this partially distributed manner it does not come as a draught on the

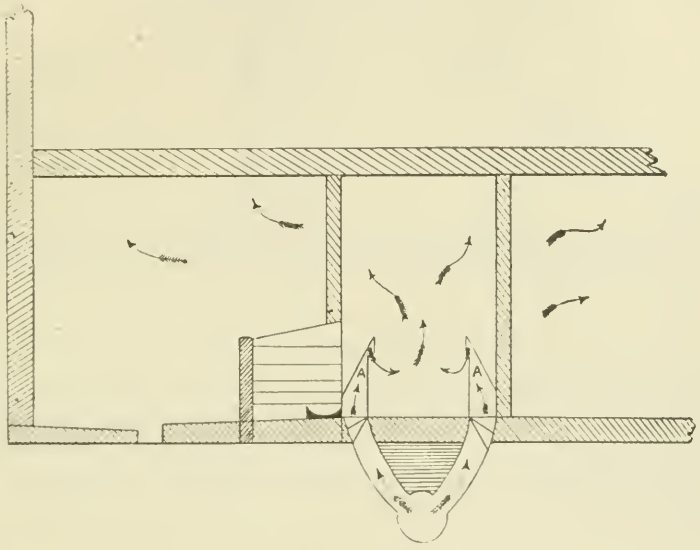


Fig. 2. Scale—8 feet to 1 inch.

animal, and its temperature is considerably increased before it escapes into the stable. The facial boards, forming space *a*, may work on hinges, enabling one to regulate the amount of air entering the stable. Here then is a means of economically and moderately warming and thoroughly distributing the fresh air entering the stables.

Removing Foul Air.

An open hatchway from the stable into an overhead barn or loft is not a satisfactory way of removing foul air from stables. It is equally unsatisfactory to construct ventilators running from the stable ceiling through the barn to deliver the foul air in the upper portion of the barn under the roof. Neither of these methods work as it is intended, but frequently results in a down draught of cold, chilling air, causing an accumulation of much frost and wet in the barn or loft. But to have effective ventilation, the foul air must be removed as the fresh air is introduced. The foul air, being warmer than the incoming fresh air, is compelled upwards. Therefore, foul air flues opening into the stable at the ceiling, running through the barn or loft above and out through the roof, will work satisfactorily. Fig. 3 shows such a flue or ventilator. It

should be straight and tight throughout its entire length, stand well up through the roof like a chimney, and be surmounted by a flange and hood to protect from rains and secure a strong upward draught.

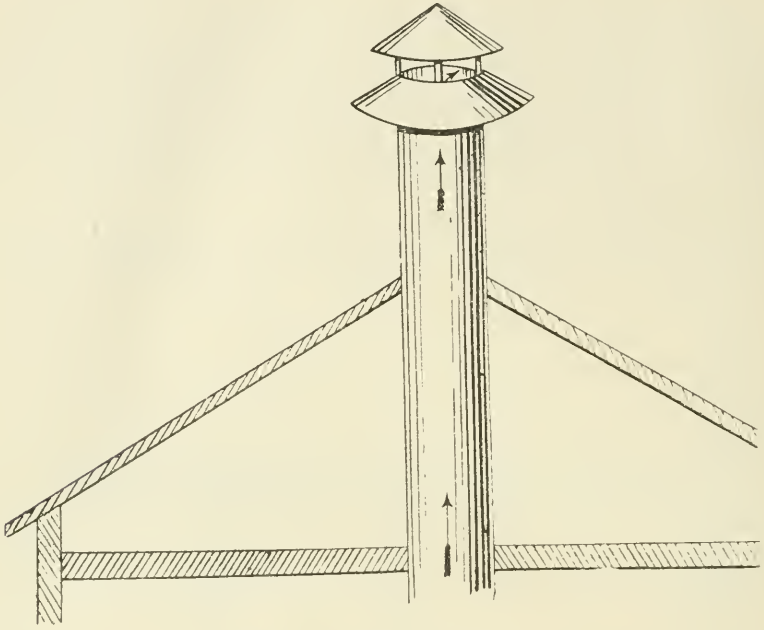


Fig. 3. Scale—8 feet to 1 inch.

Mr. E. D. Tillson, of Tilsonburg, after giving much attention to the subject of the ventilation of stables, put into practical effect in his stables, erected in 1893, the result of his study and observations. His barn and stables, which frequently have been referred to in agricultural papers, are thoroughly ventilated. The above method of ventilation embodies principles put into practice in Mr. Tillson's stables.

WEEDS.

By J. Hoyes Panton, M.A.

Any plant out of place is a weed, even if it does possess considerable beauty. Some plants are so frequently out of place that they have always been known as weeds, such as the bindweed, thistle, burr, etc. In Ontario we have somewhere about one hundred and fifty species of plants commonly known as weeds, and of these nearly one hundred have been introduced from Europe. Every year adds a few more foreigners, especially as farmers are more inclined now to have seed grown in other districts than their own. There is no doubt weeds are on the increase in Ontario, both in number and species, notwithstanding the cultivation of the land is more thorough than in former years. This may be accounted for by the comparative indifference of many farmers to the growth of weeds on the roadside, as well as to the practice which now prevails of procuring a change of seed from other parts. The productive power of many weeds is very great. The following are the results of observations on their seed-bearing capabilities. In each case the

seeds are those counted upon a single plant: purslane, 900,000; burdock, 400,328; cockle, 3,200; mustard, 31,000; Canadian thistle, 42,000; ox-eye daisy, 9,600; chess, 3,500; mallow, 16 500; campion, 4,400; sow thistle, 19,000. When we consider this productive power and the vitality some possess, together with the peculiar mode by which many are distributed, it is not a matter of surprise that we should find weeds comparatively common plants. Weeds are largely distributed by the following means: 1. In seed grain from other farms. 2. Animals carrying seeds attached to their bodies. 3. By the wind, where seeds are supplied with structures which enable them to be blown about. 4. Weed seeds are often carried from farm to farm by threshing machines. 5. Manure from city stables. The straw used in such is often obtained from dirty farms and frequently contains weed seeds. 6. Railroads are highways along which many weeds travel, and gain a wide distribution. 7. Renting farms for a short time has a tendency to develop careless farming and encourage the growth of weeds.

An analysis of weeds shows clearly that they, like other plants, take certain mineral substances from the soil, which in time impoverishes it and deprives valuable plants of their food. A knowledge of the nature of weeds becomes of importance in destroying them. Annuals live but a year, bear many seeds, and when young are weak and tender; such as shepherd's purse, mustard, cockle, penny cress, wild oats, chess, ragweed, chickweed, sow thistle. Biennials live two years and usually have a tap-root. Unless these plants are cut below the surface, cutting increases their vigor. Examples, carrot, blueweed, burdock, and mullen. Simple perrenials continue from year to year and will reappear until the root is destroyed Ox eye daisy, chicory, bindweed, sorrel, campion, are perennials of this nature. Creeping perrenials are more or less jointed in the roots, each joint capable of growing, if separated. Continual cultivation and smothering from light are necessary to kill these, among which are Canadian thistle, couch grass, toadflax, milkweed, and perennial sow thistle. There can be no specific method given to kill weeds; but there are certain general principles which can be applied and when followed are likely to be successful. Such are the following: 1. Thorough cultivation of the land. 2. Killing weeds along the roadside and in the fence corners. 3. Prevent weeds from seeding. 4. Never allow weeds to have the benefit of sunlight; this can be effected by constant cultivation, or any other means by which the weeds may be continually covered. 5. Destroy at a good time, in the case of biennials when they are about to flower, and in many annuals when they are young and tender. 6. Secure as far as possible the co-operation of others in destroying weeds. 7. Sow clean seed.

Farming in which green manuring, hoeing, soiling, growing clover and fall-plowing are followed in a systematic manner, is not likely to be characterized by dirty fields. These methods involve most of the principles stated above, and bring about conditions adverse to the development of weeds. We shall now direct attention to a few weeds which should be prevented from getting a foothold in our fields, some of them comparatively new to our Province, but they are making their appearance at several points.

1. *Sonchus arvensis.* The perennial sow thistle has made its appearance in several places in Ontario. It is one of the worst weeds that could be on a farm, and is exceedingly difficult to destroy. Any who have unfortunately had experience with it, consider it far worse than the Canadian thistle. Having a creeping rootstock every inch of which will grow when cut off, and producing very many seeds (19,000) it is well fitted to become widely distributed if not prevented by thorough cultivation and watchfulness. It belongs to the same family (Compositæ) as the common thistle of gardens which is an annual. The flower of the perennial sow thistle has a bright yellow color, and about the size of a dandelion; the flower stalk, especially near the flower, is quite hairy, and also beneath the flower is covered with brownish hairs. The roots are about the size of a pipe stem and not fibrous as in the annual form. It grows about two and a half feet high and spreads rapidly from the roots which keep constantly forming new centres. At first the leaves lie quite flat upon the ground, but a main stem soon develops and the plant assumes an erect form. Every farmer should know this weed and make every effort to prevent its getting a foothold upon his farm.

1. *Sonchus aryensis.*

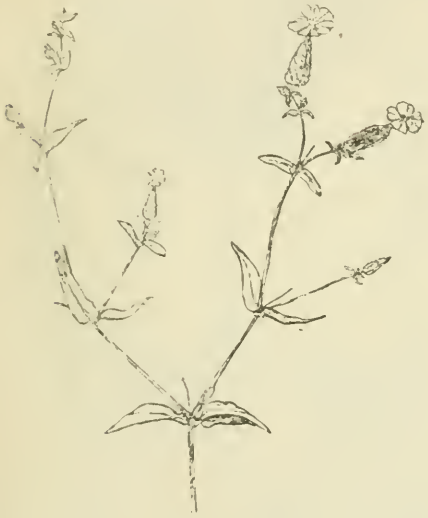
Pennycress (*Thlaspi arvense.*)

False Flax (*Camelina sativa*).

2. *Thlaspi arvense.* The pennycress is another weed whose advent should be watched. It is not a common weed yet, but we expect to find it get a foothold if not

carefully guarded. It is exceedingly common in the Red River valley of Manitoba, where it is called the French weed, and as much wheat is imported from that country, this plant will be among the seed. Already several specimens have come under the writer's notice. It belongs to the cress family in which we find mustard, wild flax, pepperwort, etc., and like them produces many seeds which posses great vitality and can resist under very adverse conditions. The pods are very characteristic, being somewhat circular and flat, with a distinct notch at the top. The leaves are oblong, arrow shaped at the base, toothed and smooth. It bears small white flowers with four petals and six stamens. It is an annual, about one foot high and emits a strong offensive odor when bruised. If this plant gets a place on the farm it will be about as difficult to get rid of as the well known mustard

3. *Camelina sativa.* The wild flax is another weed making considerable progress in being widely distributed. It also belongs to the cress family and is an annual. The flowers are yellowish but small; the pods are round and about the size of a pea, filled with small brown seeds. It has been found associated with flax and hence the name; but an examination of it shows that it is an entirely different plant.



Lychnis Vespertina.

Silene inflata.

4. *Lychnis vespertina.* This is sometimes called white cockle, and resembles the flower of purple cockle except in color. It is a biennial and the flowers are what is termed Dioecious; all the flowers upon one plant being staminate or pistillate. This plant is becoming quite common, and is a source of many of the weed seeds in clover seed. There should not be much difficulty in getting rid of it, where thorough cultivation is practiced. It belongs to the same family as common purple cockle, viz., Caryophyllaceæ (Pink family).

5. *Silene inflata.* The bladder campion is also a member of the pink family. This is a much worse weed than the preceding, as it has creeping perennial roots, and like it produces many seeds. Though resembling white cockle and sometimes called by that name, it can be readily distinguished by the bladder-like appearance of the calyx which is very thin. The pistil has only three styles while the cockles have five. The seeds of this plant are often found among clover seed.

6. *Vicia cracca.* This is the wild tare and belongs to the same family (Leguminosae) in which we find beans, clovers, etc. It bears a close resemblance to the Vetch, but the seeds are much smaller. It is a perennial and bears a cluster (raceme) of bright blue flowers. The leaves are compound, and consist of from ten to twelve pairs of leaflets at the end of which are tendrils somewhat branched.

Vicia cracca.

PIGEON WEED (*Lithospermum arvense.*)

7. *Lithospermum arvense.* The pigeon weed or redroot usually grows about a foot high, and has a somewhat branched habit. The leaves are narrow and harsh to the feeling; the white flowers are small, and when matured produce four small smooth seeds. This plant is always found more troublesome where fall wheat is grown, as it flourishes where it gets a start in the fall. It seldom troubles spring crops. The root sometimes is quite reddish and hence the name redroot. Wild pigeons are fond of the seed, hence the name pigeon weed.

8. *Rumex acetosella.* The sorrel is a weed, the small triangular seeds of which are very often among clover seed. It is common upon poor soil, grows about a foot high. Young plants grow up from under-ground stems which are perennial. The spear-head shaped leaves are very sour. The seeds are much the same in form as buckwheat, but very small.

9. *Plantago lanceolata.* The rib grass is another weed the seeds of which are frequently found among clover seed; they are something like flax seed, but very much smaller. It is a perennial with long narrow ribbed leaves. The flowers are borne on a spike. The seed of this plant is often sown in grass mixtures in the Old Country, and it is claimed sheep are fond of it; but with us it is considered as a weed, and farmers desire to get r[illegible]t as soon as possible.

10. *Convolvulus arvensis.* The bindweed is considered to be one of the worst weeds to get rid of. It has a creeping perennial root, and shows a wonderful power to continue growing under adverse conditions. The writer is at present carrying on a series of experiments with a view to ascertain what is required to subdue it. The plant is readily known by its flowers which resemble those of the morning glory, but about half the size. It grows close to the ground; no careless hoeing or indifferent cultivation will ever overcome this weed. Such conditions seem to favor its growth. Nothing short of the most severe measures will ever rid a field of this pest.

Plantago lanceolata.

Rumex acetosella.

Convolvulus arvensis.

11. *Bromus secalinus.* Attention is directed to chess especially because there yet linger some who still believe it is derived from degenerated wheat. It is one of the most remarkable cases of persistent belief in a theory that has all the teaching of science against it. We shall give some of the reasons for accepting that it is a regular species of

plant, like other plants raised from seeds of its kind, and producing always the same kind of seeds: 1. The plant is so completely different from wheat, that botanists the world over place it in another genus, Bromus, wheat being of the genus Triticum. 2. If chess is sown, it produces chess. Degenerated wheat sown under favorable conditions should return to wheat, but this never does. The most rank evolutionist would not expect to see develop in the space of a few months a plant so unlike in structure, form, and habit, that from which it is said to be derived. It is only through long periods of time that changes can be effected so as to get even a variety; but in this case one season or only a portion of it brings about such a remarkable change that the plant is ranked in another genus. 3. Farmers who are careful to sow clean seed seldom have chess 4. Chess will mature seed under adverse conditions though the plant be only two or three inches high, but if conditions are favorable it grows three feet high. This may explain why it is not seen in good crops, and yet seeding the ground for a more suitable time. When the wheat crop is injured by frosts, it then usurps the soil and becomes quite visible. 5. Wheat is grown in some parts where chess is unknown, and though the wheat is winter-killed chess does not appear. 6. Wheat is often killed in Ontario, and not followed by chess. 7. The conclusion of all men who make plant life a special study is, that chess is a typical plant, produces seed yearly, which if sown develops a plant of the same character, and that wheat seed will not produce chess nor can chess produce wheat.

Chess (*Bromus secalinus*).

COMPOSITION OF FODDERS.

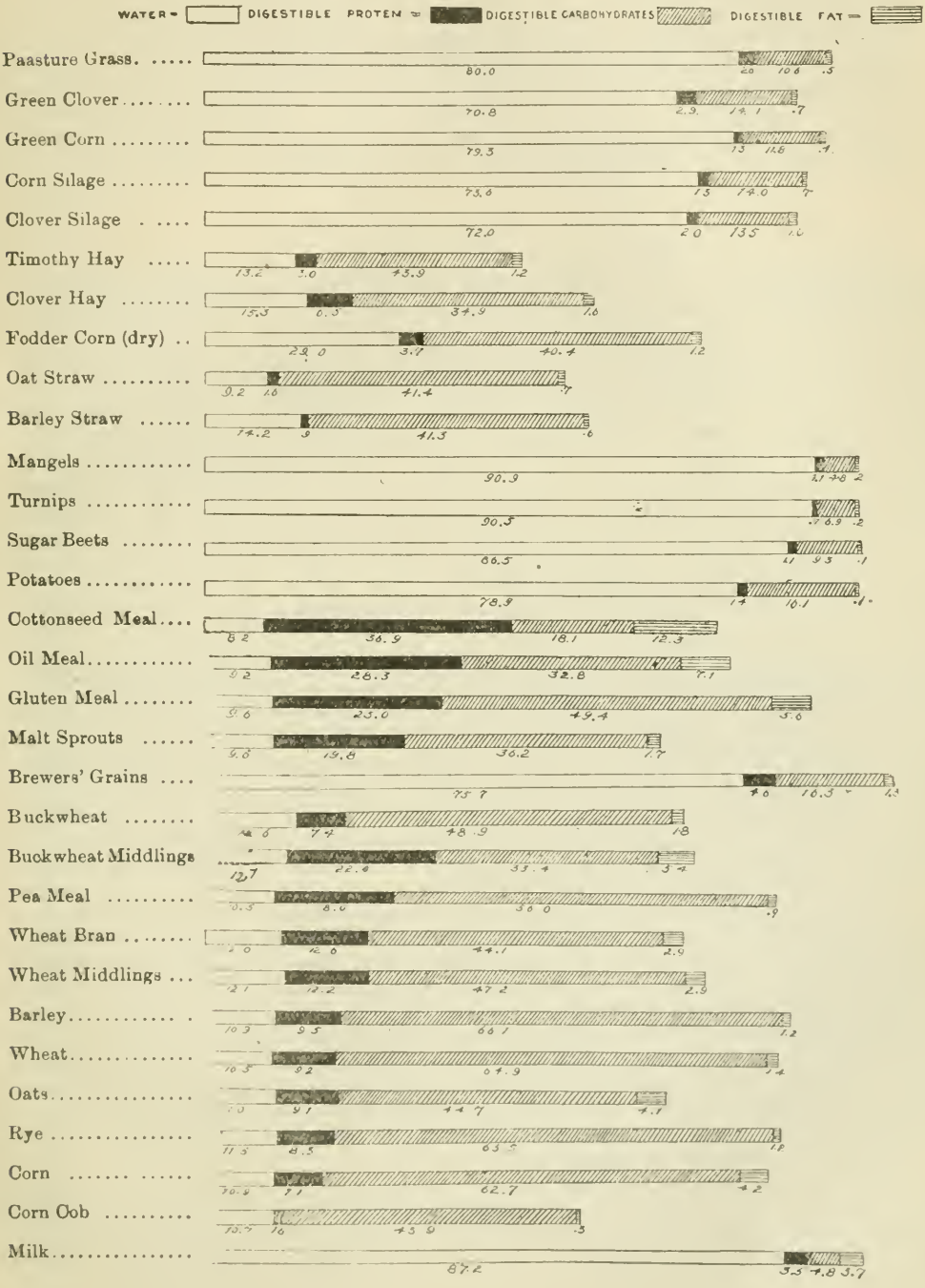
By G. E. Day, Agriculturist, O.A.C., Guelph.

In response to a number of requests for a chart representing, graphically, the composition of fodders, the following chart has been prepared from different analyses of fodders. The chart, as will be noticed, does not represent the composition of the fodders, but the number of pounds of *digestible* nutrients in 100 pounds of fodder. The figures from different analyses will be found to vary somewhat, but the variations, as a rule, are slight, and the appended figures may be regarded as approximately correct.

The different constituents represented in the chart will be recognized, as indicated at the top of the chart.

For the uses of the various food constituents, and for methods of compounding rations, see Farmers' Institute Report for 1894, page 225.

Table showing Pounds of Water and of Digestible Matter in 100 lbs.



LIVE STOCK DEPARTMENT.

RAISING HOGS FOR MARKET.

By W. S. Fraser, Bradford.

The hog, which is so common in our land, is perhaps the least understood of any of our domestic animals. It is thought by many to be the most stupid, filthy, greedy, and lazy animal we have. Now, as for his stupidity, it has been proven that he is as capable of receiving instruction as the ordinary dog; his greediness is but his willingness to turn the coarser farm products into slices of ham and bacon; his filthiness is more the fault of his owner than himself; while as to his laziness—for which he is proverbial—he is never guilty when he is in need of anything. To raise hogs profitably we cannot afford to waste time, food, or tissue. The breed must be considered. It is said, and said truly, that the feed is more than half the breed. A poor breed well cared for is better than a good breed badly attended, and a good breed well cared for is better still. The long-sided, light-shouldered kinds are in demand at present as producing the most desirable bacon. The Tamworth, Yorkshire and Chester White furnish us with this sort. They are prolific, good feeders, and grow rapidly. The Berkshire, Essex and Suffolk are shorter, thicker shouldered, heavier jowled and finer boned. They develop quickly, lay on fat easily, and, for the amount of food consumed, give more pounds in return than the larger breeds. These may be profitably crossed with the larger breeds, by using a Berkshire boar with a Tamworth or large Yorkshire sow, larger litters being secured than by crossing the other way. In these days of close competition and small profits we must economize in every particular, and sows that do not raise more than six or seven, or even eight pigs, cannot be profitably kept. A good brood sow should raise at least twenty pigs each year, and may continue to do so for ten years. The practice of changing sows often, only keeping them a year or two, is foolishness; old sows raise larger litters, and as a rule make better mothers. Sows should be kindly treated—not chased with dogs, beaten at every opportunity, or neglected in bed or board. When butchering is going on, first put her away beyond hearing, as the excitement tends to make her suspicious and cross.

She should not be mated until seven or eight months old, and at all times she should have plenty of exercise and be well fed on food largely nitrogenous. Before farrowing she should have a double pen, where she should have a limited supply of fine bedding. After farrowing she should have a warm drink and nothing else for twenty-four hours, and should be fed lightly for a few days. Sows eating their young is caused by feeding too concentrated food or from want of exercise. A mixture of bran and ground oats, with some roots or grass, fed previous to farrowing, will prevent this. As the pigs grow older the sow should have all the food she can eat (ground oats, peas and slop), and if a portion of the pen is set apart where the young pigs have access to a trough in which a mixture of ground grain and bran is kept, the young family will soon learn to eat, and are gradually taught to be self-dependent.

Castrate before weaning. They should be weaned when about seven weeks old. After separation the sow should be returned in about twelve hours and this repeated once or twice. This relieves the sow. The sow may again be mated about the fifth day after weaning. The young pigs should be kept growing continuously. Feed liberally ground oats and shorts and all the milk and kitchen slop available. Keep ashes and salt within

easy reach at all times. If the pen is small, place a wide board on edge between the trough and the bed to give exercise and prevent foundering. Spring litters are most profitably fed on clover ; a half acre of lucerne clover will, with a light ration of grain, feed twenty hogs during the summer, and will produce pork at a cost that will give a profit even at present prices. Fall litters require more food and attention to make them pay. The pens must be comfortable and the troughs must be so constructed that no food is wasted. The ration should consist of a greater proportion of heat-producing food than in summer, such as barley or peas, with a mixture of wheat middlings or bran. It is better to water before feeding, and feed meal dry, moistening it slightly in the troughs. By feeding carefully a better price can be obtained for grain than by selling on the market.

Things to be Remembered in Hog Raising.

1. Never feed hogs after they attain a weight of 180 pounds live weight, as it costs more to put a pound on them then than when younger.
2. Do not keep more than you can keep in good growing condition.
3. Exercise and cleanliness are essential to profitable hog raising.
4. Get your spring litters on the market as early as possible.
5. Do not keep two or three sows doing the work of one.
6. Kind treatment, even to hogs, pays.

THE PIG CONTROVERSY.

By D. F. Wilson, Dauphin Lake, Man.

For some years past it may almost be said that it has been a rare thing to pick up any of our agricultural periodicals without finding an article or two in them upholding a breed or breeds of pigs in opposition to other breeds. So far as Canadian writers on the subject have gone, the controversy may be summed up as a disagreement between consumer and producer. The pork packer who is indirectly the consumer, for he must cater to the tastes of his customers says, "I want a pig that will give me long, deep and lean sides of meat, such as the Yorkshire and Tamworth and their grades." The producers say "I can give you that in other breeds and can produce the meat more cheaply than by using the breeds you recommend." In answer to this the pork packer says, "We will pay more per pound for pigs of the type we want, so that it will pay you to grow them, even if they are not so cheaply fed." The Berkshire men who have taken up their pen in defence of their favorites, have argued that they can by selection give the consumers the desired conformation and lean meat which they demand and while the breeders have not said much about it, there is a feeling among farmers that pigs of the Berkshire type, take considerably less feed to produce a pound of pork than those grades which the packer calls for. It is not to be wondered at that the Berkshire breeders fight hard in defence of their breed, as for years it has been the popular pig, and by far the greater number of Canadian pigs have a strong infusion of its blood, and when a few packers say somewhat suddenly, "We want no more of them, it is not suprising that the breeders have something to say in the matter. Now let us endeavor to look at the case from a totally unbiased view ; without a leaning towards any particular breed and without prejudice against any. The pork packers claim that the farmer's interests and theirs, as to the kind of pig to be raised, are identical ; and so they are to a very large extent, provided the packer deals fairly with the farmer ; for the packer to increase his business must turn out an article which the market demands, while the farmer, who supplies him with his raw material, has the demand for this raw material increased, just in proportion as the packer supplies his customers with what they want. In these days of close competition when one country

vies with another in the markets of the world, it is ridiculous to consider, what class of product can be most easily raised. The first thing we must ask ourselves is, can we produce the article the market demands? If this can be produced at a profit, all right. If not it must be abandoned. It is useless to produce any commodity for which there is no demand, or for which a demand cannot be created. William Corbett in his "Cottage Economy" tells how a pig should he fed and says, "the last bushel fed is the one that pays the best, even if the pig has to sit down to eat it." Now pigs that reach this stage, of fat are not generally less than eighteen months old, and with the knowledge we have to-day of pig feeding, we know that a bushel fed at this age is not as profitable as if fed to a pig a year younger, and moreover the time when such meat was wanted is gone by, even by that class in whose interests he was writing, and whom he would have live on bread, bacon and beer. A Manitoba Berkshire breeder, speaking at the annual meeeting of the Central Farmers' Institute, said he had found it very difficult to get a Berkshire pig with a ham big enough to suit him. Now I can quite understand his difficulty, but think the Berkshire is not so deficient in the size of the ham as it often seems to be, its very heavy shoulder giving it this appearance. This heavy development of shoulder is, I think, a defect in a pig, for the shoulder is the poorest quality of meat in the animal. It should therefore be rather light, and as the jowl also is anything but choice eating according to present taste, it should be as light as possible, which is not the case with the Berkshire. There are, however, numbers of pigs of the breed that have shoulders that are not unduly developed, shoulders that, while not being light are of a size in proportion to the other parts of the animal. Such pigs are long and smooth in appearance, with a good heavy ham. They are pigs that the packer I should think, could not grumble at very much, and that the farmer would find profitable feeders, though in this respect they would probably not equal the shorter thicker type, as I am of the opinion that the nearer the Berkshires approach the packers' ideal, the more feed will it take to produce a pound of pork. While I believe it is all right for the breeders of the Berkshire by selection to mould their pigs to suit the demand of their customers—for they have pigs approaching that type—it seems ridiculous for breeders of Suffolks and other small breeds to do so, as I see one breeder is endeavoring to do. These pigs have their place but not as the bacon hog of to-day. No pig is easier fed, or fit to kill so young as the Suffolk, and they will always be the most profitable animal to grow for fresh pork for they may be killed at any time. They have their characteristics and uses. Why then change these and endeavor to make bacon hogs of them, when there are other breeds better adapted for the purpose than they can ever be, unless they are so altered in appearance as to be unrecognizable. Of the two breeds which the pork packer recommends (the improved large Yorkshire and the Tamworth), it looks to many as if they were advising the farmers to go back to raising the old time razor backs. Especially is this true of the Tamworths, and there are few who see them for the first time, who are favorably impressed with them. They are, however, a pig that grows on you, and when one becomes used to their somewhat peculiar appearance, their good points begin to show up. Euclid says, "A line is length without breadth." This is very nearly true of the Tamworth's head, for while the nose is long the rest of the head is small and fine, not larger than would seem actually necessary, there is next to no jowl, a very light shoulder with a great deep side and a comparatively heavy ham. Now the question is, what is the difference in the amount of feed required to produce a pound of pork in one of these big, narrow slabby pigs, compared with that required to do the same in a good average Berkshire. While some experiments have been made in this direction, I think that the experimental farms would be doing a good work by making a sufficient number of tests, that the farmers of Canada may know the comparative cost of feeding the different types of pigs. These long lean breeds are raised and fed very largely by the old country farmers, for the Berkshire is not so generally popular in England as in Canada, and these Englishmen know a thing or two about pigs as well as about other stock. They also know a good piece of bacon when they come across it, and as England must be the market for our surplus bacon, we can profitably learn a lesson or two from them, if we would have them buy this surplus.

METHODS OF BREEDING SHEEP.

By John A. Craig, University of Wisconsin, Madison, Wisconsin.

The breeder of pure bred sheep in establishing his flock may choose to follow in and in breeding, line breeding, outcrossing, and for another method that has not been named I shall use the term balanced breeding. While these methods may be said to limit the choice of the flockmaster, who has the care of registered flocks, there is wider scope for the farmer in making a choice, as he may also include cross breeding. It will be more satisfactory, then, to discuss the methods of breeding singly, from the standpoint of the breeder, and again from the point of view of the farmer who is rearing sheep for the general market.

What is In and In Breeding?

In and in breeding should be defined before it is discussed, and yet it is the difficulty in doing this that has caused the copious controversies that have been published. A definition has been put forward to the effect that in and in breeding is mating animals that are as closely related as cousins. If this understanding of in and in breeding is accepted—and it has to be so treated because of the need of a better one—it will be found to include the following relationships: sire and daughter, son and dam, brother and sister, half-brother and half-sister, grandsire and granddaughter, uncle and niece, nephew and aunt, grandnephew and grandaunt. This definition seems to embrace too much, and it is this general application of the term that has been the cause of much misunderstanding. For instance, when sire and daughter are mated, the relationship is very much closer than when half-brother and half-sister are bred to each other, and yet if the mating of the former has been found to result injuriously, the other is included in the general condemnation, because it also is in and in breeding, though there is a wide difference in the methods.

The vast variation that there is in the forms of in and in breeding, may in a large measure explain the fact that successes and disappointments have both followed its observance, though there is every reason to believe that the good results that followed its usage at an early time, were to some extent due to the new material that the breeders found, and also in a greater degree to the fact that they were exceedingly cautious in the selection of the animals that they so mated.

It may be said, in brief, that the beneficial effects of in and in breeding are that it is of material assistance in evolving and maintaining a type; it intensifies characteristics, and it is conducive to quality. It does not follow with surety that because animals are related that they are of similar type. Oftentimes brothers and sisters illustrate extremes in appearances, but it is none the less true that there is likely to be more similarity between animals that are closely related than between those that are distantly so. It is this liability to variation, even among close relations, that keeps the principle of selection to the fore, without any respect to the method of breeding that is followed. In the evolution of a new breed of sheep, in and in breeding is a necessity for the purpose of fixing a type from diversified material, and to strengthen characteristics so that they may be prepotent over all other influences; hence in the establishment of all the breeds of sheep there was a time when in and in breeding was absolutely necessary, and the breeders in making the breeds had to follow it. In reference to the comment that in and in breeding is the road to quality, there is no doubt as to its effectiveness in that direction, but it is usually a refinement that indicates weakening of the constitution. A thin skin, light bone, and fine hair are the evidences of such quality, and these are indicative of a lack of constitution.

Injurious Results from Close In and In Breeding.

The injurious results that follow close in and in breeding are tendencies towards weakness of constitution, and all the disfigurements in appearance that this implies, together with infertility. In my estimation, these are the source of the most baneful troubles that may reduce a flock. Weakness in constitution means the most favorable conditions for the introduction of all diseases that sheep are likely to have. To indicate how susceptible in and in bred animals are to defects and diseases, let me cite one instance that has occurred in my experience. A ram of excellent type was used on grade ewes. The best ewe lambs were retained, and owing to force of circumstances, these were bred to their sire. A defect in the ram that had escaped me asserted itself in the second generation. The ram was slightly crooked in his hind legs, and the lambs in the first generation failed to show this defect because of the counter influence of the ewes; but in the second generation the lambs when quite young were so deformed and weak in their hocks, that they were almost helpless.

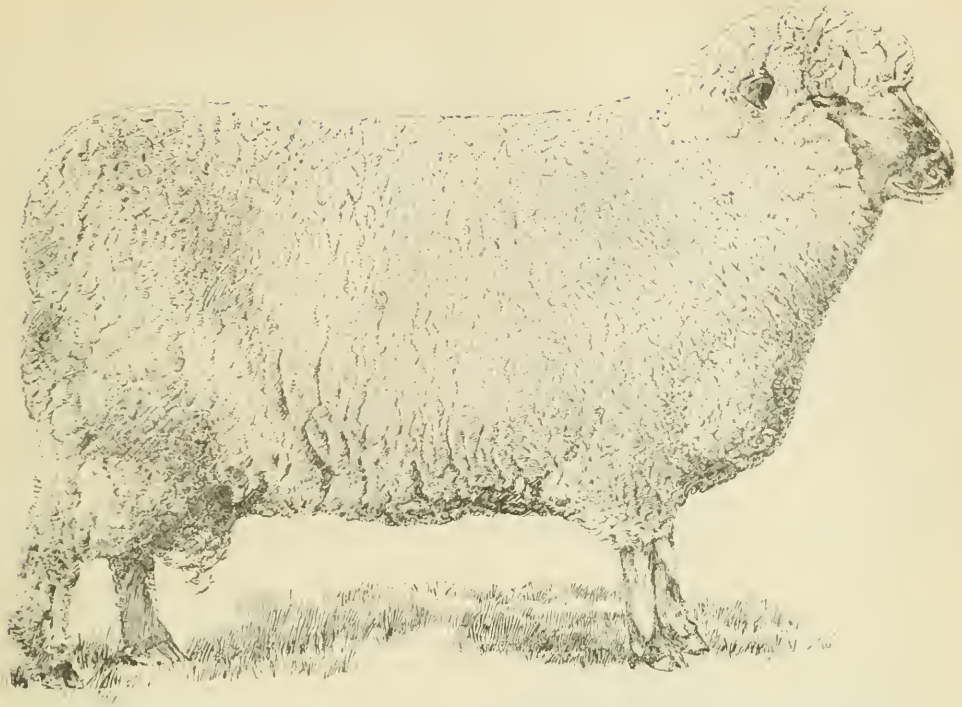
The earliest sheep breeders, Bakewell, Ellman, and others, who are frequently quoted as followers of in and in breeding, in their flock operations were compelled to breed in and in, or else permit their flocks to recede through the use of inferior foreign blood. But even they were unable to avoid the dangers, although the blood they began with was fresh and vigorous. It is John Ellman's direct statement that fresh blood in a flock is absolutely necessary to keep up the constitution, as he said, "You may retain your good shape and aptitude to fatten, but by breeding too long in and in, you will lose that strength of constitution which, in Southdowns especially, after all, is that which has spread them over the whole kingdom, and has made them so valuable." The Duke of Richmond also added to the same discussion the remark that whenever in and in breeding had been tried in his flock, he found the produce deficient in size and constitution.

Efficiency of Line Breeding.

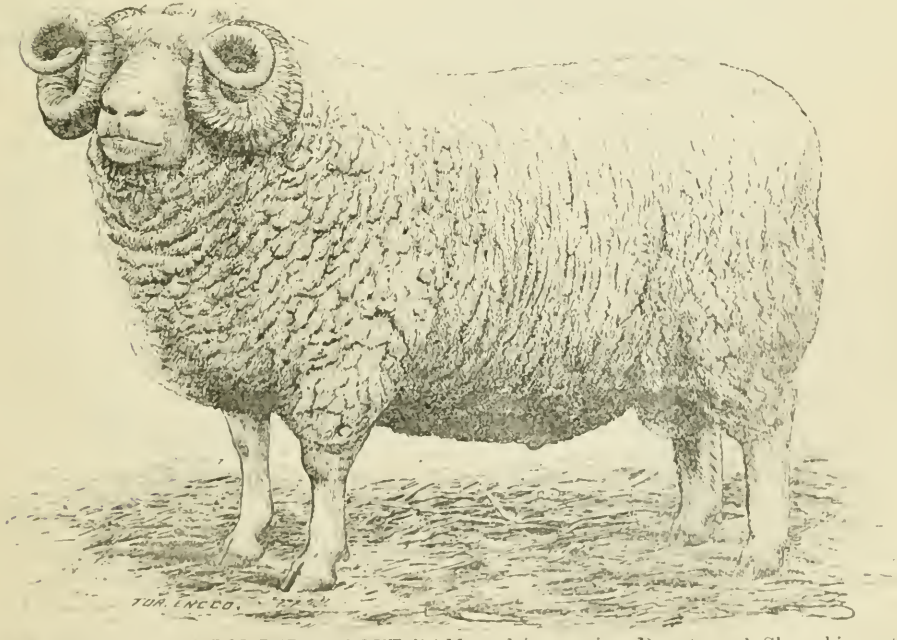
It remains to be said of in and in breeding that its advantages can be secured and its injurious tendencies evaded. That the fixing of a type can be accomplished without close in and in breeding has been demonstrated by many flocks that are line bred. Line breeding is similar to in and in breeding, except that the relationship is wider. The uniformity of the ancestry evolves a type, and it gives prepotency, while the relationship is so wide that the dangers of in and in breeding are avoided. It may be said that line breeding limits the range of selection, but as a family of sheep includes so many individuals, it does not apply with much force to sheep breeding. There is no doubt but that line breeding is the most generally adopted system of breeding followed in the flocks of the world. I have been favored with the opinions of thirty-nine of the leading sheep breeders of Europe, Canada, and the United States, and of these only five express a preference for fresh infusions of outside blood into their flocks, while the rest follow line breeding.

Successful Flocks that are Line Bred.

While there must be many superior line-bred flocks throughout the world, because of the large number of prominent breeders that follow it in their practice, yet there are two that have a remarkable record, that has been established because of pronounced adherence to this method of breeding. I refer to the large flock owned by the Murray Bros. in Australia, and the Border Leicester flock owned by Lord Palworth in Scotland. The first mentioned flock was established fifty-four years ago, and since then no outside blood has been mingled with it. Mr. Murray, in addition to being a sage in sheep lore, possessed also sound and steady judgment, which he used in the selection and mating of his sheep. He recognized the danger of in and in breeding at the beginning of his operations, and he never failed to place the quality of constitution before all others in making his selections. He increased the weight, density and quality of the fleeces of his flock,



PURE BRED SHROPSHIRE YEARLING RAM used in the cross breeding experiments with Shropshires and Merinos at the Wisconsin Agricultural Experiment Station



PURE BRED AND IMPORTED DORSET RAM used in crossing Dorsets and Shropshires at the Wisconsin Agricultural Experiment Station.

and the size of the carcases, and made the type of his sheep pronounced. Between the years 1856 and 1885 he sold eighteen thousand, four hundred and fifty-nine stud rams that realized £91,048, which of itself indicates the character of his flock. I have been favored with samples of wool from this flock, and also with photos of his sheep. I may say that the flock is never housed or artificially fed, hence the size of the sheep and the character of the wool have their origin in the system of breeding that is followed. The wool fibre shows a remarkable combination of length, strength, fineness and softness; while the fleeces are renowned because of their weight and density. While Mr. Murray's sheep are in and in bred to the extent that they are descended from one ram, yet the system that is followed is nearer to line breeding. A correspondent who personally inspected the flock, states, "the rams are used in small paddocks singly, and a system of line breeding is followed with considerable judgment in the matter of mating a type of ram with a type of ewe to produce some desired characteristic in the progeny." The flock is made up of a number of different families, and these are blended without the introduction of outside blood, so that the excellencies that are desired are made apparent. As illustrative of the type of sheep that has been evolved, it may be said that several of the rams reared on natural pasture weigh over 200 pounds, and as further evidence of the constitution of the ewes, I submit the photo of the champion ewe, "Grace." She has been a winner many times, as evidenced by the fact that she won a cup for champion ewe, Royal Show, Adelaide, 1890; cup for champion ewe, Royal Show, Adelaide, 1891; medal for best ewe and lamb, Royal Show, Adelaide, 1892; first prize four-tooth ewe, 1890; first prize six-tooth ewe, 1891.

Border Leicesters from the flock of Lord Palworth first appear in the sale ring in 1819, and since then they have attracted attention by the high averages that have been made. The highest price then paid was £7 10s. for a ram, and this has gradually grown, reaching £195 in 1873; and in 1890, the price was £155; in 1892, £150. Hon. Henry Scott in discussing the system followed in breeding this flock, makes the comment that there are natural laws that forbid the mating of very close relations, and then goes on to say that "it is this very system of line breeding that has brought the Border Leicester to its present high state of perfection." He says further, "The Mertoun flock, I think, may claim to rank high among ram-producing flocks, and almost all leading breeders use Mertoun rams with success. None but home bred rams have been used for about fifty years, and no ewes have been brought in. The flock contains five leading families, besides numerous combinations of blood, and it is by crossing the various strains that it is found possible to carry on the system."

Balanced Breeding the Foundation of all Successful Systems.

It is noteworthy that in the operations carried on with the Murray and the Mertoun flocks, as well as with others that have obtained notoriety, there is an effort made to balance the characteristics of the sires and dams, so that the progeny may possess uniform merit. This may be termed balanced breeding. It is a method of breeding in which all the qualities of the parents are so blended as to tend towards perfection in the progeny. It is based on the correct assumption that no animal is perfect, and that the nearest approach to perfection is obtained by mating animals in which the faults of the one are offset by the merits of the other. The occurrence of nicks in breeding, has led the writer to study their origin as accurately as possible. The results seem to strengthen the claims of this method of breeding. It appears that in all classes of stock there are certain strains, which, when brought together, have produced an unusually large number of remarkable animals. Their blood lines, in common terms, are said to nick. The former transmit to the latter some merits that they lack, and the reverse is also true. In trotting horses the wonderful speed prolificacy of the Hambletonian, Mambrino Chief or Morgan union is widely known. These strains more or less strengthen each other in temperament, conformation and other qualities. The Clydesdales families, Darnley and Prince of Wales, have been the producer of a large number of exceptional animals, and it seems to have its origin in the way that they strengthen each other's weaknesses when

GRACE, the property of Alex. Murray, of Mount Crawford, Adelaide, South Australia. Grazed on natural grasses only; neither fed nor housed. Winner of many cups and prizes as champion ewe at the Royal Shows, Adelaide. Grace was bred in a direct line for fifty years without change of blood.

JACOB, the property of Alex. Murray, of Mount Crawford, Adelaide, South Australia, whose flock has been line bred for over fifty years. Grazed at large on natural grasses only; neither fed nor housed. Winner of many cups and prizes as champion ram at the Royal Shows, Adelaide.

the union is affected. The prolificacy of the Harold-Premier cross in prize winning Shires, is also well known, and among Hackneys a similar fact is observable in the unusual success of the Denmark and Fireaway blend. There are a multitude of instances of the truth of this principle (and they are common to all classes of stock), emphasizing the observance of balanced breeding, no matter what other system may come afterwards. To apply this in practice to a flock, we will suppose that the ewes that are to make the foundation for it have been selected as closely as possible to a chosen type. They have faults as all sheep have, and the ram is selected to remove these faults as far as possible in the next generation. The young ewes are retained, and these also are mostly of a type showing uniformity in their weaknesses as well as in their merits. The ram that is mated with them has been selected to counteract those weaknesses. It is evident that each year brings the flock nearer to perfection, and the choice of a ram a matter of closer discrimination, for the weaknesses should grow less evident with each remove. None the less they always have some faults as new ones are constantly appearing. If the rams first used are retained and bred to the foundation ewes as long as they remain in the flock, more uniformity may be secured, as each successive step forward is made from the same basis.

As far as I have studied the methods that are available to the breeder of pure-bred sheep, the results are a preference for line breeding as far as pedigree is concerned, and when the direct choice of individuals is made, then observe the requirements of balanced breeding.

Breeding Methods for Farmers' Flocks

The ordinary flock of the farm consists of grade sheep employed in the production of wool and mutton for the common market. Under such circumstances it is possible to follow any of the systems of breeding that have been already discussed as well as cross breeding. I shall present the subject of cross breeding, not with the intention of recommending it as a system to be followed in ordinary flocks, but rather to use it as an argument in favour of the method which I have called balanced breeding. The effective reason why cross breeding cannot be recommended for adoption in the operations of the ordinary flock, is that it is altogether too expensive, as it requires the purchase of a number of animals that are pure-bred and of two distinct breeds.

The Source of Successful Cross Breeding.

Cross breeding is the fusion of the blood of two distinct breeds. It is a fact that has been abundantly proven, that cross breeding gives unusual vigor to the progeny. This feature is the most striking part of the experience of all who have made any experiments in this direction. Why it should do so must be largely a matter of theory, while the knowledge that it does so is altogether a matter of fact. It seems to me that this increased vigor of constitution that it imparts, and the excellency that it produces, are due to the same features that are common to balanced breeding. Cross breeding is usually so successful to my mind because there is a balancing of the defects of the representative of the one breed with the merits of the other, and the reverse also comes into play. Another noticeable fact about cross breeding that supports the idea that it owes its excellencies to its similarity to balanced breeding, is the fact that the first cross is usually more meritorious than any of the succeeding crosses. The reason appears to me to be because of the degree to which the weakness and the merits are made to blend. In the crossbred progeny the extreme have met, and the result in the first cross is a remarkable uniformity of usual merit. It seems to differ from balanced breeding, only in the degree to which the qualities vary from each other. This being self evident, I shall indicate what has been accomplished from cross breeding, so that it may lead to a better understanding of what may be expected from the observance of the principles of balanced breeding.

A HALF BRED LEICESTER-CHEVIOT EWE, representing the cross that is most popular in Scotland for rearing fat lambs from hill sheep. This ewe has been the winner of many prizes in her class. The property of Thomas Scott, Clifton Farm, Scotland.

MERINO EWES, representing those of the flock used in cross-breeding Shropshires and Merinos at the Wisconsin Agricultural Experiment Station.

GROUP OF BORDER LEICESTERS, representing the line bred flock owned by Lord Polwarth, Mertoun, Scotland. This engraving of a painting shows these sheep as they appeared in 1837, when a representative from this flock sold for £195 and the average made was £44, 15s., 2½d For over fifty years line breeding has been methodically followed in establishing this flock.

Cross Breeding in Great Britain.

In being the source of supply for so many different breeds of sheep, the flocks of Great Britain affords usual facilities for cross breeding. Consequently the practice is quite generally followed among the farmers of England and Scotland, when the production of the best mutton is desired. The hill sheep of Scotland, the Cheviots and the Blackfaces, are brought south and bred to Leicester rams, and other of the larger mutton breeds. This crossing for market purposes usually results in the production of a breed. Omitting but three or four of the breeds of sheep of Great Britain, it may be said that the remaining twenty or so have been made through cross breeding in which either the Southdown or the Leicester has figured conspicuously.

Cross-bred sheep at the Smithfield show in England have made a notable record. In 1887 the cross-bred sheep shown at Smithfield, stood third in daily rate of gain, with .73 pounds to their credit, while the highest was .76. In the class for wethers the same year the cross-bred wethers made a daily gain of .47 pounds, which was only excelled by another pen that had made an average daily gain of .54. In the class for fat whether lambs in 1889, the best cross-bred pens made a daily average gain of .67, which was surpassed by three other pens. The cross-bred wethers over twelve months averaged .43 pounds per head daily, which was beaten by seven other pens, representatives of the pure bred-sheep. In 1890 the cross-bred sheep held a very inferior position except in the class of twelve months old or over, where their gain of .49 per head daily was only beaten by the .52 lbs. daily gain of the winners. In 1891 the cross-bred wether lambs that were shown, were at the head of the list in daily gain, as they made .79 pounds per head. In the other class for older wethers they stood fourth with a daily gain to their credit of .48 pounds In 1892 the cross-bred lambs were third in rate of gain as they made .78 per head daily, while the pen that made the highest rate (Cotswolds) made the usual gain of .89 lbs., which has never been surpassed. Among the wethers over twelve months old, the cross breds stood fourth, having made an average daily gain of .45 pounds. In the lamb class in 1893, the cross-bred lambs were surpassed by twelve pens of lambs that were pure-breds, which was not a creditable showing, while in the other class for wethers they stood fifth. A better record was made in 1894 in the lamb class, when the cross-bred lambs had to their credit the highest daily gain, which was .82 pounds, and in the class for wethers, twelve months and over, they stood seventh. I have the records preceeding 1888 as far back as 1882, and and position of the cross bred-sheep does not vary much from that which has been given. Taking the record they have made, extending over a number of years, it will be found that the fattening qualities of the cross-bred sheep have been high, though there are only a few instances in which they have won a first place when judged on the points of the carcasses.

Cross Breeding in Australia and New Zealand.

In a publication issued by the New South Wales Department of Agriculture, Mr. A. Bruce, chief inspector of stock for New Zealand, discusses very fully the question of cross breeding sheep as it applies to all the colonies. With the growth of the trade in frozen mutton which has developed into enormous proportions between the colonies and the mother country, the crossing of some of the British mutton breeds on the Merino sheep common to the colonies, has excited much interest. Mr. Bruce urges that cross breeding should be more generally adopted as, he states, it is imperative that a remunerative outlet should be obtained for their surplus mutton, and as their sheep are mostly of the Merino breed, and that breed is not as suitable as cross-breds for the export trade, it is most essential in his view that cross breeding should be adopted, though chiefly for the reason that cross-bred wool in their market is, as a rule, more saleable, and brings fully better prices than the Merino.

The Lincoln-Merino cross apparently has given the best satisfaction for the purposes of the country, as they give the best return in both wool and mutton. The Border Leicester and Merino crosses, on rich pasture and other nutritious foods, give almost as

FIRST CROSS DORSET-SHROPSHIRE EWES. Average weight of the seven two year old ewes shown in the illustration, 185 lbs. Average weight of fleece, 10.3 lb.

SECOND CROSS SHROPSHIRE-MERINO YEARLINGS, bred at the Wisconsin Agricultural Experiment Station. This cross shows a remarkable improvement in form in comparison with the Merino ancestors and the fleece is worth more in our present markets.

satisfactory returns. They are found to be hardier than the Lincoln cross, while at the same time producing a cross-bred sheep with more rotundity of frame and depth of flesh. Their weak point is said to be the comparative lightness of the fleece and lack of covering, especially on the belly and legs. The English Leicester ranks next to the Border Leicester, the chief objection in their instance being the inferior quality of the mutton. Of the Shropshire-Merino cross, the breeders say that an excellent butcher's sheep is made from this union, as the carcass is short, compact, broad on the back and loin, round on the shoulder and deep fleshed, while the mutton is of prime quality. The wool of this cross does not, however, find a ready sale in the markets of that country. This objection they also make to the Shropshire, and they find it is even more applicable to the Southdown, as it is stated by the breeders that the wool is lighter and more inferior than that of the Shropshire cross, and the carcass also weighs less, though the quality and flavor of the mutton is high. . The Hampshire-Merino crosses have been found to have the advantage of large size, shapely carcass and good mutton, but the fleece is very poor both as regards quality and weight.

The following statement shows the views of breeders in New Zealand as to the relative values of the different English sheep for crossing, as submitted to Mr Bruce. It indicates how nearly they have secured a sheep that is satisfactory for their conditions, by this method:

	Aptitude to fatten.	Hardiness and soundness.		Lambing and increase.	Forms and shapes.	The Mutton.			The Fleece.		Suitability for crossing.	Total.
		Constitution	The feet.			Appearance.	Quality.	Weight.	Weight.	Quality.		
	7	8	5	6	12	3	7	6	20	20	6	100
Lincoln	6	4	3	4	11	2	5	6	20	18	5	84
Border Leicester	7	6	4	5	12	2	6	4	17	19	6	88
English Leicester	7	5	3	5	10	1	4	3	17	18	4	77
Romney Marsh	5	7	5	6	11	2	5	4	17	14	5	81
Shropshire Down	6	6	3	6	12	3	7	3	14	12	3	75
Southdowns	6	5	3	5	12	3	7	2	12	11	2	68
Hampshire Downs	6	5	3	5	11	2	6	8	12	12	2	72

Cross Breeding in America.

The cross breeding that has been carried on in this country has been somewhat similar to that which has been in Australia, as the basis in both instances has consisted of the fine woolled Merino. The depression in the wool market has led many to breed their flocks more in the direction of mutton, and to do this the same problem arose as that which confronted the Australian breeder: Which of the British breeds of sheep when crossed on the Merino, produces the best combination of wool and mutton for our markets, and at the same time is adapted to our farm conditions? Under the conditions that prevail over the west, where the fine wooled sheep had obtained the strongest foothold, the Shropshire had the greatest patronage of any of the distincly mutton breeds, and consequently they have been tried more extensively for this purpose. They have given good satisfaction, as the result of the cross is a sheep that is exceptionally adapted for the range, and it only requires a few crosses to make a sheep that in all market essentials is the equal of the pure-bred Shropshire. We have experimented with this cross for a number of years, and we now have a number that are of the third cross of the Shropshire on the Merino. The Merinos that we used were in no way exceptional, as they represented the fine woolen sheep that are prevalent over the west. We were very careful in

TWELVE SHROPSHIRE GRADE LAMBS under one year old, that averaged in weight 144 lb. and returned a comparative profit of $1 13 after after eight weeks feeding. These lambs are representatives of the Wisconsin Agricultural Experiment Station flock, where balanced breeding is followed as a method.

TWENTY-FIVE GRADE SHROPSHIRE LAMBS under one year old that averaged 93 lb. and returned a comparative profit of 60 cents per head after eight weeks feeding on a ration similar to the twelve lambs selected from the Wisconsin Experiment Station flock. These lambs illustrate the type and the profit that invariably results from breeding without method.

the selection of Shropshire rams to use only the best. The first cross Shropshire-Merino are sheep of exceptional utility for our conditions. Though not large they weighed more than the Merino ewes, and they were especially good in the essential mutton points. Their fleece is of high merit both in respect to the protection that it gives the sheep and also in regard to its market value. While the first crosses only sheared about the same weight of wool as the Merinos, yet the fleece was worth more, as the price per pound for it was higher. The improvement in weight, the mutton form, and feeding qualities were the chief gains through this infusion of Shropshire blood. The second cross of the Shropshire on the Merino again increased the weight of the carcass and made it much more valuable from a butcher's point of view. The wool is worth more per pound than that of the Merino or the first cross, as it was longer and stronger in fibre. While the second cross gains in these particular points, the density of the fleece that is characteristic of the first cross is lost. The third cross shows a nearer approach to the pure bred Shropshire. In fact we have some second and third crosses that could hardly be separated from pure-bred Shropshires on their appearance, and for common market purposes they are equally profitable. The third cross wool is slightly longer, coarser and stronger than any of the preceding crosses, and on the market it does not bring any more than that of the second crosses. As in all instances of cross breeding, the first cross shows the greatest improvement. The blending of the qualities of the two breeds, the fine dense fleece of the Merino and the mutton carcass of the Shropshire, seems to be most effectively accomplished in the first cross.

Another line of cross breeding that we have tried at our station, has been the crossing of the Dorset and the Shropshire, with the object of establishing a flock for breeding early lambs. In this the first cross has proven to be an unusual sheep. They have been an improvement in many particulars over the representatives of both of the pure-breds that were used. As will be seen in the photo that is here presented, they are exceptionally fine-bodied sheep with a remarkable spring of the rib, indicating good constitution. The fleece is rather light, but the wool is in demand owing to its fineness, softness and strength. The most remarkable feature about the cross, however, aside from the fact that they are early breeders, is the excellence of the forms of the first crosses from the butcher's standpoint. We have not found that all of the first crosses are uniform in respect to the time that they will breed. It will likely require more top crosses of the Dorset to make this characteristic fixed to the degree that it should be to make a flock profitable for breeding early lambs. The second crosses do not show the vigor that is characteristic of the first, though they are in no wise markedly deficient in that respect.

Balanced Breeding the Most Successful.

That exceptional results have been obtained from cross breeding under a great variety of conditions is undoubtedly true, and I believe that through another method the beneficial features may be secured without entailing as large expense. Cross breeding, as before intimated, is but balanced breeding, through the mating of animals representing wider extremes than those brought together in balanced breeding. I am satisfied that the latter is the best course for the farmer who is trying to build up a flock to produce wool and mutton for the common market. As to what can be accomplished by following the method of balanced breeding in a grade stock, I shall put our own in evidence. We started with a mixed collection of ewes, and after one or two cullings made them moderately uniform. After three years' breeding on this method and some culling, the photo which is here presented shows the first fruits in a collection of ewe lambs that were retained as additions to the flock. Better evidence than these as to the success of the method might not be required, but we have it in the form of a direct experiment as to the profit of lambs so bred and those of the ordinary noudescript breeding that is followed on some farms. Last year I purchased one hundred lambs in the northern part of our State. They were lambs that were thoroughly representative of those bred from common roadside flocks From among these I selected twenty-five head that were thrifty and representative of the rest. From among our own lambs, I selected twelve that were

GRADE SHROPSHIRE EWES, representing the flock used in cross-breeding Dorsets and Shropshires at the Wisconsin Agricultural Experiment Station.

GROUP OF HIGH GRADE SHROPSHIRE EWE LAMBS, raised on Wisconsin Agricultural Experiment Station Farm, where balanced breeding has been followed. Average age, 13 months; average weight, 127 lb.; average weight of wool shorn, 10 lb.

equally representative of our lambs. These two lots of lambs were fed exactly alike in every particular, except that they were all given as much as they would eat. The ration in all cases consisted of peas and corn as the grain portion, with corn fodder in addition. The following table presents the results of the trial :

	Twenty-five lambs of inferior breeding.	Twelve lambs of good breeding.
Weight at ending of feeding trial	2,342½	1,737¼
Weight at beginning of trial	1,889½	1,391
Gain in eight weeks	453	346½
Average weekly gain per head	2.26	3.60
Amount of food eaten :		
Corn fodder	2,569½	1,620
Corn	1,221	852
Peas	1,221	852
Total cost of food	$20.75	$14.14
Cost 100 pounds gain	4.58	4.08

It will be seen from this statement that our lambs were better feeders than the others, and the gain was correspondingly greater. The point of importance, however, is that our lambs returned us nearly double the profit obtained by those of inferior breeding. The following table makes this clear :

	Lambs of inferior breeding.	Lambs of good breeding.
Estimated cost	1,889½ lbs. at 3c.—$56.68	1,391 lbs. at 3c.—$41.73
Estimated value	2,342 lbs. at 4c.— 93.70	1,737 lbs. at 4c.— 69.50
Cost of food eaten	$20.75	$14.14
Profit per head	0.60	1.13

This is the best argument that I can offer for balanced breeding. We select our rams to correct the faults of our ewes ; and in this way we have found that each year we have a few lambs that show decided progress in useful essentials to add to the main flock.

EXPERIMENTS IN SHEEP FEEDING.

By Prof. Geo. Harcourt.

Every farmer is more or less of an experimenter, for he is always trying new plans for his work, new seed grains, new methods of feeding, new combinations of feeds, and constantly trying any change that promises better things. The great drop in the price of nearly all farm produce has had its effect upon the sheep industry, and has led many to abandon sheep raising altogether ; there is, however, good evidence for believing that, if properly handled, there is good money to be made out of sheep. The object of this paper is to gather together the facts that have been brought to light by recent experiments in feeding sheep at the experimental stations in the United States as well as at the station at Guelph, and see if they have any lessons for us in the manner of handling our sheep.

1. Bodily Development.

A recent foreign experiment shows that the most rapid increase in the bodily development of a lamb is made in the first two months. At birth the weight of the lamb is only about one-thirteenth to one-fourteenth of the average weight at maturity, *i.e.*, when they had attained their full growth, as evidenced by the completion of the second dentition. By the time the lamb is two months old it has increased to one-third its mature weight, when five months old it has attained one-half, when between six and seven months two-thirds, and when between eight and nine months three-fourths of the adult weight. If these results are attained by a breed of sheep that does not reach maturity as rapidly as our own, how careful we ought to be that the lambs have the best possible start in life, and to keep them improving at a time when they are willing to make the best possible use of the food fed to them.

2. Feeding Milk to Lambs.

Every sheep raiser meets with circumstances which compel him to resort to cow's milk for his lambs. The Wisconsin Experiment Station tried feeding lambs whole cow's milk. Four lambs were taken from their dams when ten days old and fed whole milk, at blood heat, four times a day for three weeks. During that time they consumed 226 pounds of whole milk and gained 39 pounds in weight, or almost one half pound each per day. At this rate it would require 579 pounds of whole milk to make 100 pounds gain, and as the milk was valued at 60 cents per 100 pounds, the cost of one pound gain was 3.47 cents. During the next four weeks 424 pounds of sweet skimmed milk, 14 pounds oats, and 23 pounds green clover were fed, and the lambs gained 53 pounds, or nearly one-half pound each per day. The cost of a pound gain was 2.3 cents. The experiment was continued and showed clearly that cow's milk, whole or skimmed, has a high feeding value when fed to young lambs.

3. Early Lamb Raising.

In some sections of the country quite a profitable trade is carried on in raising lambs for the early market. This market opens when the Christmas poultry is out of the way, about the middle of January, and continues into April, sometimes into May. From Bulletin 88, New York, Cornell, Experiment Station, a few pointers are gathered that may be of value to those engaged in this work. From a study of the ewes, thoroughbred and grades, which have been handled the last few years, it has been found that there is a close connection between early breeding and great milk production. The ewes that raised the best lambs were found to be the best milkers, and as a rule the earliest to breed. The great difficulty of this line of work is to get the ewes to breed early, but here we have a key which may open the way to some. The ewes should not be forced until the lambs are a few days old and all danger past, then they can be forced to their utmost for milk production. Teach the lambs to eat, and induce them to eat as much as possible, for both ewes and lambs must be forced to their utmost until the lambs are sold, which will be in from four to eight weeks. The ewes respond the second year more quickly to the forcing feed. The lambs must be well fatted ; no matter how large and thrifty a lamb may be it must be fat or it will not bring the highest price. A change of grain for the lambs will induce them to eat more, and the best coarse fodder has been found to be good clover hay.

4. Feeding Grain to Lambs before and after Weaning.

Experiments along this line have been conducted for three years in succession at the Wisconsin Experiment Station, and extended over the life of the lambs, from the time of birth until they were ten or eleven months old. See tables I. and II. The lambs were weaned when about three months old. They were fed their grain in shallow troughs in a small pen partitioned off from the general pen, and having an opening into it large enough for the lambs to get in readily, but small enough to stop the ewes.

Table I.—Increase and Food of Lambs before Weaning:

	1st trial, 1891, April 30 to July 9, 10 weeks.		2nd trial, 1892, April 27 to July 20, 12 weeks.		3rd trial, 1893, May 10 to Aug. 2, 12 weeks.		
	Lambs fed grain, lot 1.	Lambs no grain, lot 2.	Lambs fed grain, lot 1.	Lambs no grain, lot 2.	Lambs fed grain, lot 1.	Lambs no grain, lot 2.	Lambs no grain, lot 3.
	lbs.	lbs.	lbs.	lbs.	lbs.	lbs.	lbs.
Average weight of each lamb at the beginning	18.6	19.3	24.2	22.7	37.3	36.9	37.0
Average weight of each lamb at the end	63.5	55.8	61.8	56.2	78.2	65.1	70.6
Average gain of each lamb during period.	44.8	36.5	37.6	33.5	40 9	28.2	33.6
Average weekly gain of each lamb	4.48	3.65	3.1	2.70	3.40	2.35	2.80
Grain eaten per head by Lot 1. Bran. Cornmeal. Oilmeal.							
1st trial 6.6 10.0 10.0	26.6	.....	.....	.....	.....	.....	.....
2nd trial 23.3 8.8 10.6	.....	.....	42.7	.....	.....	.....	.....
3rd trial 25 0 25 0	.....	.....	.....	.....	50.0	.....	.....
Cost of grain for each lamb	18 cts.	.....	34 cts.	.....	47 cts.	.....	.....

Table II.—Increase and Food of Lambs after Weaning:

	1st trial, 1891, July 9 to Nov. 19, 19 weeks.		2nd trial, 1892, July 30 to Nov. 9, 16 weeks.		3rd trial, 1893, Aug. 2 to Nov. 8, 14 weeks.		
	Lambs fed grain, lot 1.	Lambs no grain, lot 2.	Lambs fed grain, lot 1.	Lambs no grain, lot 2	Lambs fed grain, lot 1.	Lambs no grain, lot 2.	Lambs grain after weaning, lot 3.
	lbs.	lbs	lbs.	lbs.	lbs.	lbs.	lbs.
Average weight of each lamb at beginning	53.0	52.7	65.8	58.2	78 2	65.0	70.6
Average weight of each lamb at the end	103.7	82.6	99.8	84 5	97.6	77.9	91.7
Average gain of each lamb during period.	50.7	29 9	34.0	26.3	19.4	12.8	21.6
Average weekly gain of each lamb.	2.66	1.86	2.10	1.60	1.40	.91	1.50
Grain eaten per head by Lot 1. Cornmeal. Oilmeal. Bran. Oats.							
1st trial.. 122. 61.	183.	.....	.....	.....	.....	.....	.....
2nd trial. 6.9 120 5	.....	.....	127.4	.....	.....	.....	.....
3rd trial	.....	.....	.....	.....	62.1	.....	62.1
Cost of grain for each lamb	1.47 cts.	.....	1.13 cts.	.....	56 cts.	.....	56 cts.

From a study of these tables it is easy to see that it pays to feed grain to lambs from their birth. Our breeders of thoroughbred stock know this from hard experience, but a great many of our farmers have yet to learn that there is any profit in feeding grain to lambs. We must constantly bear in mind what was said at the beginning of the paper about bodily development.

In each of the trials just cited the same lambs were continued for another trial, a fattening one, and it was found that those lambs that had received grain kept the lead they had gained. At the close of the fattening period when sold they weighed more than the others, or in other words they were ready for market earlier than their companions. In the first two trials the grain-fed lots reached an average weight of 125 pounds per head, three and four weeks, respectively, before the others, and in the third trial the grain-fed lambs reached an average weight of 113.9 lbs. per head seven weeks before the others, and it was found that it was made at slightly less cost, because, as will be seen

from Table II., in the third trial the lambs were not fed so much grain after weaning, and that which was fed was one that would promote growth.

"The average weight of the grain-fed lambs when sold was 140.2 pounds, and that of the others 121.7 pounds per head." In the spring when the lambs were sold, at the close of the fattening period, the grain fed lambs brought three-quarters of a cent. per pound more than those that had no grain until winter feeding began.

"The feeding of grain before weaning produced an average of sixty-one cents per head more profit at weaning time than that obtained from the lambs receiving no grain."

"The feeding of grain after weaning to lambs that had not received any before weaning produced an average increase which slightly more than paid good market price for the grain they ate, up to the time they were sold in the fall."

"The feeding of grain made all the fleeces of the lambs receiving it more compact and smoother than the others."

"The grain-fed lambs sheared in three trials an average of 2.2 pounds more wool per head than the others."

5. Feeding Grain to Suckling Ewes.

If it pays to feed grain to the lambs the question arises would it not pay to feed the grain to the ewes instead, or to feed them also that they might do better by their lambs? Bulletin 32 of the Wisconsin Experiment Station answers this question conclusively. Forty ewes having fifty-six lambs were divided into four lots having ten ewes and fourteen lambs in each lot and were fed as follows:

Lot 1. Grain was fed to both ewes and lambs.

Lot 2. The lambs only were fed grain.

Lot 3. The ewes only received grain.

Lot 4. Neither ewes or lambs received any grain.

The results were decisive; in no case did the lambs show any apparent benefit from feeding the ewes grain. The lambs of Lot II. gained 18.5 pounds more than those of Lot I. The lambs of Lot IV. gained ten pounds more than those of Lot III. In both cases this gain was made at less cost because there was the extra grain fed to the ewes to account for in the other cases. Besides it must not be forgotten that a pound of gain made by a lamb is worth double that made by an old ewe. After weaning the ewes will pick up quickly any loss in weight they may have sustained while suckling the lambs. The conclusion is this: "When ewes are properly fed during the winter so as to be in good condition at lambing time, it does not pay to feed them grain when on good pasture, with the object of securing more rapid and profitable gain in the lambs."

6. Rape as a Food for Lambs.

Having looked over the experiments bearing upon the early life of the lamb we will pass on to a subject of interest in connection with fall feeding—the value of rape as a food for sheep. At the Ontario Agricultural College it was found, in the first experiment with rape, that the lambs upon it gained eighteen pounds, in sixty-two days, or .29 pounds per day. Later experiments show many lambs can be kept on an acre, but do not give the gain made by the lambs. It is found that an acre of rape will feed about twelve lambs for two and one-half months. In the last experiment sixty lambs were fed for a period of twenty-three days on an acre of rape. At the Michigan Experiment Station an acre of rape pastured nine lambs for seven weeks and made a gain of twenty-two and one-half pounds per lamb. There can be no doubt that rape makes a good food for putting lambs in good shape for winter fattening, or for putting sheep of any kind in good shape for winter. Its use is extending; a larger area of it is grown every year and will continue to be grown as farmers find out its value.

7. Shelter for Lambs.

Under this head experiments relating to the housing of lambs during the winter will be considered ; whether it is better to give them only the lee side of a building for shelter, to confine them closely in a pen or to give them comfortable quarters with opportunity for plenty of outdoor exercise. Some of our farmers hold to the idea that the lambs, with their heavy coats, do not need very much protection ; others again, believing that all gain made by the lambs comes from the food fed, keep the lambs confined that they may make the greater gain. In an experiment conducted at the Minnesota Experiment Station, Bulletin 44, the lambs without any shelter, other than that afforded by a building as a windbreak, made the least total increase, while those housed all the time, but without the opportunity of outdoor exercise, made the next least increase, and those that had comfortable housing with access to a good yard during fine weather and were shut in during stormy weather made the greatest gain. Bulletin 128, Michigan Experiment Station, gives an account of an experiment with twenty lambs : Ten were shut in the sheep barn and at no time were they allowed to go outside the barn ; the other ten were fed in an adjoining pen, but had access to a yard, and were never shut in during the severest weather, hence they were often drenched with rain and covered with snow. The results were not very definite. The outdoor lot consumed more grain, ate less hay and drank less water than those constantly confined. The cost of the rations was practically the same, but the increase in live weight was considerably in favor of the lot fed inside, as was also the profit. This would seem to indicate that a certain amount of protection from exposure is a factor in the profitable fattening of sheep.

8. Fall Shearing of Lambs.

The teaching of the German experimentors has been that animals suffer as great a loss when stabled too warmly as when the stable is too cold. While this refers more particularly to cattle, yet it is thought by practical feeders that towards spring the lambs suffer from the heavy fleeces they then carry, and that they would make more profitable gains if relieved of their heavy coats.

The idea of taking more than one clip in a year is not new, though at one time it might have been taken more for the wool than for any assistance it might be to the fattening process. In the 1885 report of the Ontario Agricultural College we find the following table :

Table III.—Three Clips in fifteen months.

Class.	Lamb clip, July, 1884.	Clip, March, 1885.	Clip, June, 1885.	Total clip in 15 months.
	lbs.	lbs.	lbs.	lbs.
Cotswold	3 5	11.0	6.0	20.50
Leicester	3.25	10.0	5.0	18.25
Oxford Down	3.0	8.0	5.0	16.00
Shopshire Down	3.0	10.5	5.0	18.25
Southdowns	2.25	7.5	5 5	16.25
Means	3.00	9.4	5.5	17.85

In Bulletin 68, Ontario Agricultural College, is given an account of a test between ten lambs shorn and ten lambs not shorn. The lambs were shorn the end of November and confined in adjoining pens. The doors of the unshorn lot were kept constantly open, except in stormy weather ; the doors of the other pen were kept closed except on fine days. The food was the same in both cases.

Table IV.—Summary of results of shorn and unshorn lambs.

	Ten unshorn lambs.	Ten shorn lambs.
	lbs.	lbs.
Weight at beginning	1,119.00	1,028.50
Weight at close	1,545 50	1,456.00
Increase per group	426 50	427.50
Average daily increase per group	3.774	3.783
Average daily individual increase	.377	.378

This experiment speaks for itself, only one pound gain in favor of the shorn lot

Experiments along this line have been made at the Michigan Experiment Station. In the first trial, Bulletin 107, the lambs were shorn at the close of the fattening period in March, and were fed only three weeks afterwards. During the thirteen weeks before shearing the average weekly gain was 1.9 pounds per lamb, and for the three weeks after shearing the weekly gain was 2.8 pounds per lamb. The results of this trial were apparently favorable to shearing in the spring in warm quarters.

In the second trial, Bulletin 128, one lot was shorn the first few days of December, and although housed in somewhat warmer quarters in the sheep barn than the unshorn lot, they suffered considerably from the cold, made smaller gains, required more dry matter to make a pound of gain, and gave a smaller profit than the unshorn lot fed the same kind of feed.

At the Wisconsin Experimental Station two trials have been made. In the first trial one lot of lambs was shorn the 12th of December, and made seven pounds less gain than the unshorn lot similarly fed. The unshorn lambs sheared two pounds more wool, and made their gain at less cost.

In the second trial one lot of lambs was shorn the fourth day of November and gained seven pounds more than the lot not shorn until spring. The cost per 100 pounds gain was, however, greater for the shorn lot (being $4 44) than for the unshorn lot, which was only $4.17. The early shearing had an influence on the rapidity of fattening, for it was found that the shorn lot made three-tenths of their total gain during the first half of the fattening period, while the unshorn lot only made one-tenth in the same time.

It will be seen that the shearing is of doubtful advantage; if it is to practiced at all it should done early in November, before real cold weather sets in, or else early in the spring in warm quarters.

9. Silage and Roots for Fattening Sheep.

The value of roots in a fattening ration for lambs, or a maintenance ration for breeding ewes, is so well known that nothing need be said about it; but with the advent of the silo a new phase of the subject has been opened up, namely, the value of silage as compared with roots in supplying the succulent portion of a ration. At the Ontario Agricultural College (see Reports 1892 and 1893), silage as against roots for the succulent portion of a ration for fattening lambs has been tried two years in succession, with fifty lambs in 1892, and forty eight lambs in 1893. In each case the lambs were divided into two lots, lot 1 getting roots (turnips and mangels sliced), and lot 2 corn silage. The other feed was the same in both cases.

Table V.—Increase and Cost; Roots *vs.* Silage:

	1892.		1893.	
	Lot I. Roots.	Lot II. Silage.	Lot I. Roots.	Lot II. Silage.
Average increase per lamb per day	.262 lbs.	.257 lbs.	.242 lbs.	.210 lbs.
Cost of food to produce one pound increase	8.47 cts.	7 82 cts.	8.0 cts.	7.5 cts.

These experiments show that while the silage did not make mutton as quickly, it was made at less cost.

Bulletin 84, Michigan Experimental Station, gives results of an experiment where silage was compared with sugar beets for fattening lambs. Sixteen lambs were divided into two lots, the one fed silage, the other sugar beets; the rest of the ration was hay and grain—the same in both cases. Special pains were taken to guard against any error.

Table VI.—Increase and Cost; Roots *vs.* Silage:

	8 Lambs Silage	8 Lambs Sugar Beets.
Average gain in twelve weeks for each lamb	30.0 lbs.	36.0 lbs.
Average weekly gain for each lamb	2 5 "	3 0 "
Cost of one pound gain	4 96 cts.	4.38 cts.
Profit on each lamb	$1 32	$1.57
Profit in favor of roots, per lamb	.....	.25

In a second trial, where rutabagas were used instead of sugar beets, and twenty lambs in each lot. The profit arising from the lot fed roots was twenty-two cents per head, while that from the lot fed silage was sixty three cents per head, being a profit in favor of the silage of forty-one cents per head.

Bulletin 37, Massachusetts Experiment Station, says that corn silage as a substitute in part for rowen has given very satisfactory results.

Bulletin 43, of the same station, reports that the feeding effect of corn silage compares well with that of globe mangels when fed with the same kind and amount of grain feed.

Wisconsin Experiment Station, Report 91, reports an experiment where three lots of four ewes were fed respectively, corn silage, sugar beets, and clover silage, with the same kind and quantity of other feed. In the matter of cheapness the corn silage leads the others, then the clover silage, and lastly, the sugar beets. All the ewes were thrifty; if there was any difference it was in favor of those fed on the corn silage. Repeated examination of the udders of the ewes showed that those that were receiving the clover silage were giving the most milk, those getting the corn silage came next, and lastly, those fed on sugar beets. No evil effects were noticed, in any way, from the silage. The sugar beets were liked by the ewes, but they cannot be said to equal the corn and clover silage, and if fed in quantities over four pounds a day to each ewe they are apt to produce scouring.

Cornell Experimental Station, Bulletin 47, made a trial of silage and hay with grain, against hay alone with grain, for lambs eight months old. The five lambs on silage and hay and grain made a total gain of 135.5 pounds, while those on hay and grain gained 124 pounds. The silage and hay proved the cheaper ration. Four pounds of silage were found to equal one pound of hay.

Sufficient has been shown upon this subject to draw the conclusion that silage has a good standing when compared with roots as the succulent portion of a ration. The ratio of gain has been generally in favor of the roots. while the cost of gain has been favorable to the silage.

10. Feeding a Limited and Unlimited Grain Ration.

Many feeders are using what is called a "self-feed" for supplying grain to fattening lambs. It is a feeding device whereby a constant supply of grain is given the sheep; once filling will do for several days' feed. By its use the cost of attendance is reduced, and it is claimed also that the lambs can be more rapidly finished.

The Michigan Experiment Station, Bulletin 107, reports an experiment in which five lambs were fed their grain with a "self-feed." It was found that these lambs ate a larger amount of grain and less hay than those of another group receiving the same ration fed in the ordinary way. It was found that it took more pounds of grain to make a pound of gain, hence more expensive. Bulletin 113, from the same station, gives the details of a more extended trial in which eighty lambs were used. The results were practically the same as those reported above. Tne "self-feed" was given another trial the following year and the results reported in Bulletin 128. The following table gives the leading facts of the three years' work with different lots of lambs:

Table VII. Three years' results with a "Self Feed."

	1892-3.		1893-4.		1894-5.		Average.	
	Self Feed.	Ordinary way.	Self Feed.	Ordinary way.	Self Feed.	Ordinary way.	Self Feed.	Ordinary way.
	lbs.	lbs	lbs	lbs.	lbs.	lbs.	lbs.	lbs.
Amount of hay eaten	528.0	1,225 0	713.0	914.0	854.0	1,056.0	698.0	1,065.0
Amount of grain eaten...	2,120 0	1,123.0	1,503.0	1,253.0	1,341.0	1,132.0	1,654.6	1,169.3
Total gain.....	260 0	300.0	212.0	286 0	208.0	237.0	226 6	274.3
Average weekly gain.....	2.17	2.5	1.77	2 38	1.73	1.97	1.89	2.28
Dry matter to 1 lb. gain..	9.5	6.76	9.57	6 58	9.66	7.57	9.57	6.97

It is plain there is no economy in a "self feed." The experiments extend over three years and show that it is an expensive plan. In every instance the lambs fed in the ordinary way made the greatest gains and produced those gains at the least expense.

An experiment at the Minnessota Experiment Station, Bulletin 44, bears out the same truth. It may be a labor saving device but it is not an economical one.

11. Temperature as affecting the Gain.

In a recent experiment at the Minnessota Experimental Station, Bulletin 44, it was noticed that during the very cold dips the lambs did not gain as rapidly as during moderate weather, although during the cold snaps they consumed a larger amount of grain. This would seem to be in accordance with the teachings upon the subject of feeding, but at the Michigan Experiment Station, Bulletins 107 and 113, they seem to have found the opposite to be the case, the greatest gains were made during the coldest weather and also with the least expenditure for dry matters, while, on the other hand, the smallest gains invariably accompanied a rise in temperature and required an increased amount of dry matter to make one pound gain. This was noticed two years in succession. More light is evidently wanted on this aspect of the question of feeding lambs.

12. Comparative Values of Grains for Feeding Purposes.

It is exceedingly difficult to draw any definite conclusions from a study of different rations as fed in different experiments. There is always a difference in the foods themselves, the animals, methods of handling them, and then in the surroundings of the animals. Thus in comparing the different rations and their results, we must remember that they have been fed at different Experiment Stations, and to a different lot of animals each year. In spite, however, of these drawbacks, there are lessons that can be learned from a study of these rations. To make it possible to compare these rations more fully they should all be put upon a common footing. It is hardly fair to compare the profit made say at Wisconsin with the profit made at Michigan or some other station, even if the foods fed were the same. The prices of these foods vary, also the cost and returns for the lambs fed; therefore the following scale of prices will be used in estimating the cost of the different rations that follow in Table VIII, this will put all the rations upon a uniform basis for comparison.

Hay	$ 8 00 per ton	.4 cents per pound.
Corn Fodder	4 00 per ton	.2 cents per pound.
Roots	2 00 per ton	.1 cent per pound.
Ensilage	2 00 per ton	.1 cent per pound.
Corn	40 per bushel (56 lbs)	.7 cents per pound.
Bran	13 00 per ton	.6 cents per pound.
Oats	30 per bushel	.8 cents per pound.
Oilmeal	25 00 per ton	1.2 cents per pound.
Wheat	53 per bushel (60 lbs.)	.8 cents per pound.
Peas	60 per bushel (60 lbs.)	1.0 cent per pound.
Barley	45 per bushel (48 lbs)	.9 cents per pound.
Cottonseed meal	28 00 per ton	1.4 cents per pound.

If we are to estimate a profit it will be necessary to set a price upon the lambs as they enter the experiment and another as they come from the experiment; but such values would be too arbitrary, and would give no definite information.

Table VIII. Comparative values of different rations for fattening Lambs.

	Distinguishing ration.	Experimental station	Number of lambs.	Length of experiment in weeks.	Grain.	Hay.	Roots.	Gain in weight.	Average weekly gain per head.	Cost of one pound gain.	Pounds of grain fed to one pound gain.
					lbs.	lbs.	lbs.	lbs.	lbs.	cts.	lbs.
1	Oats	Mich., B. 107.	10	17	1963.0	1694.0	1190 0	379.0	2.23	5.61	3.96
2.	Oats	O. A. C., R 84	4	14	735.0	1092.0	546.0	156.0	2.60	6.92	4.71
3.	Peas	O A. C., R. 84.	4	14	628 0	1050.0	460.0	105.0	1.75	10.41	5.98
4.	Barley	Rothamstead	5	18	630.0	1879.0	.....	139.0	1.54	9.48	4.53
5.	Barley	Minn., B. 31	10	12	1268.0	630.0	.....	199.0	1.65	7.00	6.37
6.	Barley (ground)	Rothamstead	4	10	280.0	.....	3867.0	81.0	2.02	7.88	3.45
7.	Bran	Mich., B. 107.	10	17	1779.0	1728.0	1190.0	242.0	1.4	9.90	7.35
8.	Wheat	Mich., B. 128.	10	13	1201 0	1199 0	.....	217.0	1.67	6 63	5.53
9.	Corn	Mich., B. 113	10	15	1579.0	1097.0	.....	328.0	2.18	4.70	4 81
10.	Corn (self feed)	Mich., B. 113.	10	15	1506.0	961.0	.....	248.0	1.65	5.80	6.08
11.	Corn	Mich., B. 128.	10	13	1208.0	1142.0	.....	233.0	1.80	5.58	5.18
12.	Corn	Wisconsin	5	8	427.8	288.5	.....	104.5	2.61	3.30	4.09
13.	Corn (cracked)	Minn., B. 31	10	12	1103.0	849.0	.....	211.0	1.75	5.26	5.22
14.	Corn and roots	Mich , B. 107.	10	17	1757.0	1675.0	1190.0	443.0	2.60	4.78	3.96
15.	Corn and roots	Mich , B. 113.	10	15	1612.0	964.0	2720.0	397.0	2.64	4.50	4.06
16.	Corn (3), oats (2)	Wisconsin	15	12	2596.5	1320.0	.....	529 5	2.94	4.67	4.90
17.	Corn and wheat (outdoors)	Mich., B. 128.	10	13	1196.0	1087.0	.....	205.0	1.57	6.44	5.83
18.	Corn and wheat (indoors)	Mich., B. 128.	10	13	1164.0	1173.0	.....	230.0	1.77	5.83	5.06
19.	Corn and wheat (shorn)	Mich., B. 128.	10	13	1266 0	1336.0	.....	161.0	1.24	9.21	7.86
20.	Corn and wheat (unshorn)	Mich., B. 128.	10	13	1232.0	1209.0	.....	249.0	1.91	5.65	4.95
21.	Corn and wheat	Mich., B. 113.	10	15	1485.0	1118.0	.....	295.3	1.97	5.28	5.03
22.	Corn and bran	Mich., B. 113.	10	15	1703.0	1124.0	.....	266.7	1.78	5 84	6.38
23.	Corn and bran (self feed)	Mich., B. 113.	10	15	1838.0	959.0	.....	237.0	1.58	6.65	7.75
24.	Corn and bran and roots	Mich., B. 107.	10	17	1973 0	1698.0	1190.0	358.0	2.10	5.81	5.50
25.	Corn and peas	Wisconsin	5	8	503.8	256.0	.....	126.0	3.18	3.48	4.00
26.	Corn, peas and oats	Wisconsin	5	8	493.5	300.0	.....	120 5	3.02	3.47	4.09
27.	Corn, bran and oats	Mich., B. 107.	10	17	2953.0	2481.0	1785.0	581.0	2.30	5 57	5.08
28.	Corn, bran and oats (self feed)	Mich., B. 107.	5	17	1060.0	264.0	680.0	130.0	2.16	6 96	8.15
29.	Bran and oats	Mich , B. 107.	15	17	2935.0	2582.0	1785.0	541.0	2.12	6.03	5.40
30.	Corn and oilmeal	Mich., B. 113.	10	15	1735.0	1152.0	.....	357.0	2.38	3.60	4.86
31.	Corn (cracked) and oilmeal	Minn., B. 31	10	12	2711.0	634.0	.....	289.0	2.40	9.91	9.38
32.	Corn (1), oats (2), oilmeal (1)	Wisconsin	8	14	1080.8	†1449.0	713.6	323.2	2.88	4.04	3.34
33.	Corn, oats and oilmeal	Wisconsin	10	14	1971.0	1433.0	973.0	407.0	2.90	5.60	4.84
34.	Corn, oats and oilmeal	Wisconsin	15	14	3001.0	583.5	.....	625.5	2.97	4.36	4.79
35.	Corn, oats and roots	Cornell, B. 47.	9	15	950.0	982.0	1012.0	202.0	1.53	5.79	4.70
36.	Corn, oats and roots	Mich., B. 107.	10	17	1735.0	1711.0	1190.0	436.0	2.60	4.82	4.40
37.	Corn, oilmeal and roots	Mich., B. 113.	10	15	1716.0	967.0	2675.0	392.0	2.61	3.50	4.37
38.	Wheat and oilmeal	Mich., B. 113.	10	15	1530.0	1147.0	.....	290.7	1.94	4.53	5.26
39.	Wheat and oilcake	Minn., B. 44	8	17	1753.0	772.0	.....	278.0	2.07	6.37	6.30
40.	Barley and oilmeal	Minn., B. 31	10	12	1591.0	603.0	.....	274.0	2.25	6.28	5.80
41.	Bran, linseed and cottonseed	Cornell, B. 47.	9	15	1118.0	1330.0	1292.0	245.5	1.85	7.33	4.55
42.	Bran, linseed and cottonseed	Cornell, B. 47.	5	15	678.0	905.25	.....	124.0	1.68	7.91	5.46
43.	Bran, linseed, cottonseed and silage	Cornell, B. 47.	5	15	669.5	606.0	*1166.0	132.5	1.80	6.35	5.05
44.	Corn and corn silage and corn fodder	Wis., R. VIII	3	12	377.0	†150 0	*322.0	98.0	2.72	3.30	3.84
45.	Corn silage and corn fodder	Wis., R. VIII	6	12	703.0	†655.5	*409.7	181.0	2 51	3.67	3.88
46.	Oats, bran and silage	Mich , B. 107.	20	17	2345.0	1974.0	*8108.0	586.0	1.72	5.17	4.00
47.	Oats, bran and roots	Mich., B. 107.	20	17	2345.0	2439.0	13413.0	589.0	1.73	6.38	3.98
48.	Barley and oats and roots	Woburn	3	19½	658.0	224.0	17561.0	384.3	2.75	6.25	....

* Corn silage. † Corn fodder.

The foregoing table is one that will require a good deal of studying, but will well repay the time spent upon it. The combinations of grains and the results are interesting and profitable study. Take oats for an example. Oats alone for fattening purposes are not as good or as cheap as oats and corn, or in combinations with corn and peas; or corn and bran; or corn and oilmeal. It is conceded by all feeders that for growing lambs, oats are splendid but as the fattening process extends they should be replaced by a more fattening food such as corn.

Corn and its combinations present a study well worth the consideration of every feeder.

Corn silage and corn fodder will also well repay study in these days of close competition.

The greatest gain made by any one of the rations was made by No. 25, corn and peas, and not very far behind it was corn, peas and oats; they were also two of the cheapest rations. The ration that made the next best gain was corn, oats, and oilmeal; in fact, three times this ration gave high results. Corn and oats take the next rank, and not very far behind is a ration of corn, corn silage, and corn fodder. Not only did it make a good gain but it is the cheapest ration in the list, being equal to corn and hay No. 12, and producing a greater gain.

The ration that produced a pound of gain for the least number of pounds of grain, was No. 32 corn, oats, and oilmeal, next was ground barley then the silage rations.

Feeders will require to study the grain rations they are feeding, in the light of recent investigations, and take advantage of all the information they can gather from experimental sources, if they are to hold their own in the face of the present competition or make the profits they have been in the habit of doing.

Properly handled there is money in lambs, not only in the cash returns but in an indirect way in building up the soil and thus putting the farmer in a position to do better year by year. Ontario has the sheep well adapted for fattening, she has the men who know how to feed them and has also a good climate, and there is no reason why a most profitable trade could not be carried on in fattened sheep.

SHEEP IN MANITOBA.

By D. F. Wilson, Dauphin Lake, Man.

Up to a short time ago nothing was so profitable on Manitoba farms as sheep, but prices suddenly dropped, and there is now a tendency among many who have been keeping sheep, to go out of them. For the reason of this sudden drop we have not far to look. "Hard times" covers it all. Sheep have in the past brought good prices, owing to there not being a sufficient number in the Province to supply the local demand; mutton was therefore expensive meat, but owing to the present shortage of money, people have been economizing and there has been less demand for it; this coupled with the increased number of sheep in the Province, has caused the very material drop in the values in Manitoba. As to the wool, it has never commanded a really good figure, and at present it is lower than ever—lower a great deal than it ought to be, when compared with the goods manufactured from it by the one woollen mill in the Province, which can manufacture but a small percentage of the wool produced. The inclination on the part of farmers who have been keeping sheep, to get rid of them on account of this lowering of the profits, is to be deplored, for at the present time I believe the number of sheep in the Province should be increased by every means possible. The Manitoba sheep industry is just at that stage which is so difficult to ride over; the local demand fully supplied and yet the surplus not large enough to create an export trade. Farmers at such a time naturally reduce their stock, and this generally re-acts and causes a brisk demand, owing to a shortage of that particular article of produce to supply the home market; but this is not the principle to which we should look to give us remunerative figures for any of our

farm products; it is most unsatisfactory and little or nothing is made by it in the long run. To-day, when the Manitoba industry is threatened with what has already happened to the pig industry, and which seems to be about to overtake that farm product a second time, it behooves every farmer who keeps sheep to stay with them and rather increase than diminish his flock; and those who have not yet kept sheep should endeavour to acquire a few.

In travelling through the Province it is only here and there that farms are found on which sheep are kept. Instead of this being the case, a small flock should be found on every farm. Small flocks, well kept, on every farm, should be encouraged rather than large flocks here and there. Manitoba should be a sheep producing Province; its climate is eminently suitable, being so dry, and those who have had experience with sheep find that sickness is almost unknown among them. This is no small consideration when it comes to the question of profits. We have been exporting cattle to the Old Country with considerable success, but the embargo put on them has had a serious effect on the profits made by the producers. If we can ship cattle to England, why can we not ship sheep? Now, if we had them to export, would be an opportune time to work up a trade in sheep, as there are nearly two million sheep less in the United States than there was a year ago. Another great benefit to be derived from the keeping of sheep, would be found in the effect they would have in keeping up the fertility of the soil, a purpose for which they seem specially adapted. In one of the great wheat growing districts, one of the largest farmers, in speaking of the soil exhaustion, which he said would face the wheat grower in the near future, could see no means of getting round the difficulty except by keeping large flocks of sheep. These are some of the reasons why the Manitoba farmer should keep sheep.

But some may say, "Are we to keep sheep and lose by them till we can work up a trade with the Old Country?" There is no danger of this, for if all the advantages derived from keeping sheep be taken into consideration, they will pay well at the present prices, in fact, much better than some other products to which much more attention is given. We have also a local market which needs working up, and a most important one it is. How much mutton has been consumed by the Manitoba farmers? Comparatively speaking, none, and yet a considerable amount of money has been paid out each summer by farmers to the local butchers for fresh meat. Fresh meat is one of the farm products which farmers have in the past bought, and which in the future they can raise, if they keep a few sheep, and thus save the middleman's profit. Too much cannot be said of the advantages of this home grown supply of meat, and now that the price is low, farmers will not think themselves extravagant these hard times if they kill a sheep for home consumption instead of selling it. Now as to "ways and means." The great objection to keeping sheep has been the cost of fencing, and even at the prices that have ruled in the past they would soon pay for this, but under the present circumstances, fencing on a large scale is out of the question, except in those districts where there is plenty of bush. Most farmers can, however, make shift to fence enough to keep half a dozen ewes, and there is enough waste land on most farms, in the shape of a small slough or bluff, to make a nice bit of pasture, especially if there are a few willows in them. A little white clover seed scattered in their shelter will much improve and vary the quality of the bite. Red top and timothy may also be sown, and is hardy enough not to require the shelter of the bushes. I know one farmer in the centre of a wheat growing district, who has fenced such a piece of land with a sort of hurdle fence of his own make, composed of poles and wire. He says nothing he has tried has paid him so well as his sheep. Half a dozen sheep on every farm in Manitoba would be a source of considerable wealth to the Province, for we may rest assured that these would soon increase in number. Summer fallows could be utilized in growing feed for sheep, and the sheep would be of the greatest benefit to the fallows by tramping over the land in the fall. Another objection that may be raised in some districts, is the time that will be required to attend sheep. It is too often asserted by farmers that they have no time to milk cows and attend to stock. Have they no time to look after those branches of the farm which would pay them best? And the returns from sheep properly managed will certainly not be found far behind those of any other department of the farm.

FEEDING LAMBS AT IOWA EXPERIMENT STATION.

By James Wilson and C. F. Curtiss.

The sheep industry of the United States along mutton lines is one of growing importance. The Department of Agriculture at Washington reports 38,298,783 head in January, 1896, valued at $65,167,735. The United States exported 405,748 sheep in 1895, valued at $2,630,686 and during the same year imported 291,461 head, valued at $882,618. Analysis of these movements would show that we send fat sheep to Europe and import principally lambs from Canada and breeding sheep from England. The sheep industry of the United States has gone through periods of prosperity and depression. Federal laws at one time favored the fine wool breeds; the modification and final repeal of those statutes made it evident that more attention must be given to the mutton feature and that wool should only be incidental. The exports of sheep in 1891 were 60,947; in 1892, 46,960; in 1893, 37,260; in 1894, 132,370; and in 1895, 405 748—a total value of $4,507,057—showing that the American farmers are rapidly turning their attention to production for export. The imports for the same time amounted to $5,813,612, showing that we have imported more sheep in the past five years than we have exported; $204,723 of this was for breeding sheep from the United Kingdom.

The total number of sheep in the State of Iowa in January, 1896, as given in the year book of the Department of Agriculture at Washington, was 565,137, valued at $1,399,279. The State census for 1895 reports the total number at 492,875, valued at $1,160,535. The latter authority reports the value of sheep sold for slaughter in 1894 at $475,886, and the value of fleeces at $380,875. The State census shows that Iowa farmers are giving attention to the improved breeds, reporting 48,730 Merinos, 33,583 Cotswolds, 3,699 Leicesters, 3,754 Suffolks, 100,060 Shropshire Downs, 8,486 Oxford Downs, 7,428 Southdowns, and 4,629 Hampshire Downs. These numbers are, perhaps, not all eligible to registry. The census takers have, doubtless, included some grades of different breeds, but the report indicates the extent to which improved blood is being used in the state.

It is sometimes said that Iowa lands are too valuable to be devoted to sheep raising, but the high priced lands of Great Britain sustain 600 sheep per 1,000 acres of agricultural lands, and Scotland in 1893 had even as high as 1,380 sheep per 1,000 acres, according to Professor John Wrightson, of London. Iowa has at the present time, according to State statistics, not more than 25 sheep per 1,000 acres of agricultural lands. The County of Lincolnshire, England, has over twice as many sheep as the entire State of Iowa.

It is well known that the skill of the breeder has done much towards improving the sheep; early maturity has been brought about with some breeds, together with increased amounts of weight on the high selling parts, and wool that sells for comparatively high prices. It is also generally known that the best mutton breeds are profitably handled on the richest lands of Europe; suggesting to us that the State of Iowa with its rich grasses and cheap grains may become the home of the best breeds of mutton sheep, that can profitably rival other domestic animals in farm economy. These considerations determined us to enter upon a series of experiments with sheep at this station, that should comprehend testing the several improved breeds, comparing them with each other, with the natives, cross-breds and grades of the country, and so that the Iowa farmer might get facts useful in determining what breed would answer his conditions best. We had also in view the relative economy of producing mutton compared with the products of other farm animals, from given amounts of the same kinds of feed; the requirements of markets at home and abroad, and the best age at which to place sheep upon the market. To this end, we purchased during the autumn of 1895, ten spring lambs each of nine pedigreed breeds, and in addition, ten crosses between the Shropshire and Merino; ten Range lambs, and five yearling Shropshire wethers. The several improved breeds are the results of development along special lines; the Merino is the fine

wool sheep, and has been popular for that characteristic, and it was desirable to ascertain its comparative mutton value. The Horned Dorset is famous for its high fecundity, being one of the most prolific of the breeds, and peculiarly valuable when early spring lambs are desired from it, or its crosses, or grades; it was desirable to learn of its comparative feeding value at different ages. The Leicesters, Lincolns and Cotswolds are the heavy, long wooled mutton breeds, developed on the heaviest English pastures. The Down breeds are noted for good mutton qualities. The ten Range lambs were representatives of that extensive locality of our country, west of the 100th meridian where sheep can be bred in semi-wild conditions, but where grains and hay for winter finishing are limited, owing to limited rainfall. About one-half of the sheep of the United States are found in this locality and subject to these conditions. Many of them are driven or shipped east to the corn growing section of the country to be fitted for market; corn is hauled west for finishing sheep in the Alfalfa regions. The foundation blood in the sheep in these new states and territories is the early importations of the Spaniards into Mexico; it has been modified by grading with the English Downs and heavy mutton breeds, and to some extent by the climates of the higher altitudes of the north. Iowa feeders who have been devoting their attention to the making of beef may find it profitable to handle the Range lamb. The five yearling Shropshire wethers were added to ascertain the relative economy of fattening sheep at different ages.

The Chicago market creates a demand for the sheep and lambs of the northwest, and the supply of them gives indication of the present condition of the business. The supply is mostly from the ranges, and the weights are quite light. Sheep weigh around 100 pounds, and lambs from ten months to a year old from 60 to 80 pounds. Bulletin No. 32 of the Colorado Station, reports:

"Most of the native sheep of Colorado are raised on the open range with no shelter, and but little extra feed through the winter. The cost of ranging sheep for a year varies from thirty to eighty cents. The return is about 50 cents worth of wool and a lamb worth from seventy-five to ninety cents."

The station says regarding the profits of feeding the several classes of lambs:

"The Mexican lambs gave the best net profit, eighty-eight cents per head; the western lambs, grades of English sheep, seventy-one cents; the western yearlings a loss of thirteen cents per head, and the Mexican yearlings a loss of five cents per head. During January, February and March the market is supplied from the east westward—the country east of the Mississippi and Missouri rivers sell out its mutton from January to April, Nebraska and Kansas from March to the middle of April, and Colorado from April first to June first."

This refers to home demand and supply, and from weights and prices quoted, it is evident that the sheep are not the sorts that Iowa farmers with fifty dollar land would be justified in breeding, while it may not be profitable to move them eastward by rail to be fattened on Iowa grains and fodders. The corn and tame grass sections have never made systematic efforts to fatten sheep, as they have cattle and hogs. Well finished cattle and hogs are fed for market all the year round, but the sheep has been almost entirely neglected. Two Canadian provinces, Quebec and Ontario, sent us 1,524,046 head of sheep during the five years ending June 30th, 1895, valued at $4,976,010. At a time when sheep sell higher than cattle or hogs, their profitable production is worth enquiring into.

The lambs used in this experiment were purchased from the following parties:

Three Southdowns from John Jackson & Sons, Abingdon, Ont.

Three Southdowns from James Scott, Aberfoyle, Ont.

Three Southdowns from William Martin, Binbrook, Ont.

One Southdown raised on the College farm.

Six Shropshires from Joseph Edgerton, Nassua, Iowa.

One Shropshire from Hon. John Dryden, Toronto, Ont.

One Shropshire from Richard Gibson, Delaware, Ont.

Two Shropshires raised on the College farm.

Two Oxfords from Henry Arkell, Arkell, Ont.

Three Oxfords from John Phin, Hespeler, Ont.

Five Oxfords from Herbert Wright, Guelph, Ont.

Three Suffolks from James Thompson, Mildmay, Ont.

Five Suffolks from W. B. Coburn, Milton, Ont.

One Suffolk from W. J. Rudd, Eden Mills, Ont.

One Suffolk from Ontario Agricultural College, Guelph, Ont.

Eight Lincolns from Gibson & Walker, Denfield, Ont.

Two Lincolns from T. E Robson, Ilderton, Ont.

Seven Cotswold from Robert Miller, Brougham, Ont.

Three Cotswold from D. McCrae, Guelph, Ont.

Six Leicesters from E. Gaunt & Sons, St. Helens, Ont.

Two Leicesters from Peter Thompson, Salem, Ont.

One Leicester from Watt Brothers, Salem, Ont.

Two Dorsets from R. H. Harding, Thorndale, Ont.

Seven Dorsets from John A. McGillivray, Uxbridge, Ont.

One Dorset from H. G. S. Codd, Westfield, Iowa.

Nine National Delaine Merino from Joseph Edgerton, Nassua, Iowa.

One Dickinson Delaine Merino raised on the College farm.

Ten crossbreds (Shropshire on Merino) from Wm. Worthington, Thornburg, Iowa.

Ten range lambs from Wyoming, purchased through Clay, Robinson & Co., Chicago.

Four Shropshire yearlings from Richard Gibson, Delaware, Ont.

One Shropshire yearling from W. O. Critchman, Muscatine, Iowa.

Most of these lambs arrived at the experiment station early in November as rams. The station was obliged to purchase ram lambs in order to be able to make good selections in all cases, as not enough suitable wethers could be found. The selections were carefully made from the flocks mentioned with a view to representing every breed with as good specimens as could be obtained. Many other flocks were inspected. The yearlings were purchased as wethers, though only a few could be found, and we were obliged to limit the number to five.

As soon as the lambs arrived they were put onto blue grass pasture and a light feed of oats morning and evening. All rams were castrated or "twisted" soon after arrival. The method of castrating used was that of turning and twisting the testicle. This consists in first reversing the position of the testicle so that the point of attachment of the cord is below, and following that the testicle is twisted until moderate tension is produced. When in this position it is pushed into the upper part of the scrotum and held in place for thirty-six to forty-eight hours by means of a string tied firmly below it, taking care it does not pass through the inguinal ring. All of the lambs should be carefully examined when the strings are removed. Out of one hundred lambs operated on in this manner, we only lost two, and the loss of those could probably have been avoided by closer attention. . . . The operation produces swelling and stiffness, but seldom puts lambs off feed. The testicles in a majority of cases nearly disappear when the work is properly done, and this method is entirely effective in producing quiet lambs for feeding.

In the latter part of November the lambs were separated into lots of ten, each according to breed, and put into permanent quarters for the winter feeding experiment.

These quarters consisted of plain board shed room twelve by fourteen feet, and an open yard adjoining about twelve by thirty for each breed. All of these apartments faced to the south and the conditions were as nearly uniform as could be made. Hay was fed in racks inside the shed and grain in troughs in the open yard. An ample supply of bedding was kept in both shed and yard, and the door between them never closed. Sheep prefer to lie in the open air much of the time in winter. The sheds had no opening except the doors on the south and were so arranged as to prevent the passage of injurious draughts of air. A box of salt was kept constantly before each lot. The main grain and hay feeds were given night and morning, and a feed of roots was given at noon. The hay was fed first, morning and evening, and grain followed. Water was given about nine a m. each day, and again before the evening feed of hay. All feed was carefully weighed in, and everything left was weighed back and deducted. But very little food was left, however, as the aim was to so regulate the amount as to have each feed eaten promptly. The grain troughs were cleaned each time before feeding, and the hay racks cleaned and emptied of leavings as often as necessary. Every breed was fed to its full capacity, of a ration uniform in composition to all. The credit of executing the details of the feeding is due to Mr. W. G. Skinner, whose faithful service is fully attested by the results that follow herewith The preliminary feeding was continued through December, and by January first all were on full feed. Lambs need to be led up to full feed very gradually and with a great deal of caution. When once successfully started, the greatest danger is past, but over feeding and irregularity should be carefully guarded against at all times.

During the preliminary period we fed Summers' Worm Powders about once a week to all of the lambs. The range lambs were dipped as soon as they arrived on the station grounds, to avoid the danger of introducing scab. We did not then deem it necessary to dip the other lambs, but later in the winter several of the breeds became more or less infested with ticks and lice. A new species of sheep louse was found. When these parasites made their appearance in the flock it was late in the winter, and too cold, we thought, to dip with safety, and as a means of ridding the flock of the annoying pests, we used pyrethrum powder. This was most effectually applied by the fleece being parted on the back and sides by the shepherd, while a boy operated a good-sized powder gun, thereby injecting the powder to the skin. One, and in some cases two, thorough treatments of this kind proved to be entirely succeesful in destroying both ticks and lice.

The first and final weights and gain of the ninety day test period were as follows:

	Weight, January 1st.	Wool Sheared, (March, 16-19)	Weight, March 31st, (without wool.)	Weight, March 31st, (including wool)	Total gain.
10 Southdown lambs	912	67.5	1,250	1,317.5	405.5
10 Shropshire "	1,007	87.5	1,349	1,436.5	429 5
10 Oxford "	1,190	109.5	1,553	1,662.5	472.5
10 Suffolk "	1,165	76.5	1,585	1,661.5	496.5
10 Lincoln "	1,206	128.5	1,577	1,705 5	499.5
9 Leicester "	1,186	101.	1,506	1,610.	424.
10 Cotswold "	1,183	126.5	1,613	1,739.5	556 5
10 Dorset "	1,000	68.25	1,377	1,445.25	436.
10 Merino "	822	95.	985	1,080.	258.
10 Cross-bred "	810	75	1,105	1,180.	370.
10 Range "	707	51.25	989	1,040.25	333 25
5 Shropshire yearlings	840	52.5	937	989.5	149.5
Total	12,037	1,042.	15,826	16,868.0	4,831.0*

*The variation of the total gain here and in the main feeding table is due to the fact that the decimals were dropped in the latter.

The weight of the wool is properly included in computing the total gain for the period, as it was on the sheep when they were weighed in. The original weights were obtained

by taking the average of three daily weighings taken successively at the same hour and under the same conditions, though the aggregate weight of ten lambs taken under similar conditions was found to vary but little from one day to another. It was also found that these weights varied less when taken after full feed and water than when taken after feeding and before watering. Each lamb in the experiment was given an ear tag number and all are weighed singly on the first and sixteenth of each month. Frequent weighings are considered somewhat of an interruption to the best gains, but in careful experimental feeding it is desirable to know just what each animal is doing. In doing the weighing a portable platform scale and crate were taken into the pens, and the lambs passed over the scales one at a time. Two men usually weighed the 114 lambs in about an hour and a half.

The detailed record is quite well brought out in the following table. The grains enumerated were evenly mixed together and fed in that condition. During the preliminary period, and until the 10th of January, the proportion was 50 pounds of bran, 200 of oats, and 200 of shelled corn. During the middle of January the ration mixture was gradually changed to 25 pounds of bran, 50 of oil meal, 200 of oats, and 200 of shelled corn. This feed was continued to the close. Each lot, as before stated, was fed to its full capacity of this ration, together with roots and hay.

January 1st the daily grain ration ranged from one and a half to two pounds per lamb for all breeds except the Range; these ate only one pound of grain each. At the close of the experiment the lambs, excepting the Range, were eating from two to two and three-fourths pounds of grain per head daily. The Range lambs were then taking one and a half pounds. The yearlings ate from two to three pounds of grain per head daily. The total amount of hay eaten was about two-thirds, by weight, of the total amount of grain. The roots ranged from one-half to one pound per head daily.

Rate of Gain.

The total gain made by all the lambs was 4,678 pounds from 3,450.15 pounds of dry matter in the feed consumed—a rate of one pound of gain for each 7 37 pounds of dry matter. The yearlings required eleven pounds of dry matter per pound of gain, or nearly fifty per cent. more feed for a pound of gain than the lambs.

During the time that this experiment was in progress, a cattle feeding experiment was being conducted in an adjoining yard. A car load of prime Hereford cattle coming two years old were being fattened and were finished and put on the market at the same time as the lambs. The feeding covers a longer period than the sheep feeding, but the complete record presented in another place in this bulletin is fairly representative of the best work in feeding cattle of that age. The cattle were fed on a ration quite similar to that used for the sheep, and the amount of dry matter required for a pound of gain was 8.09 pounds.

In bulletin No. 60 of the Ohio Station, Director Thorne and Professor Hickman present the compilation of the results of cattle feeding experiments in eight different states, using in all 132 head of cattle, and showing an average gain of one pound for each 10.24 pounds of dry matter in the daily ration. A recently published estimate based upon the work of Lawes and Gilbert gives eleven pounds of dry matter per pound of gain in cattle and nine pounds in sheep. The better results from both cattle and sheep at the Iowa station than those reported elsewhere are doubtless in part due to the fact the younger animals were used in these two experiments. . . . The evidence all indicates a higher gain, however, from a given amount of grain fed to sheep than when fed to cattle, unless it be in such a comparison as is furnished by the yearling sheep and the young cattle. In this case the sheep had about reached maturity before fattening began, while the cattle at that age were in thrifty growing condition. Other things being equal, the sheep apparently makes more economical gain than the steer. There are two other features that should also be noted in this connection, viz, the value of the droppings from cattle and the returns from the fleece of the sheep. While these are quite variable, it is safe to say that the wool feature will fully compensate for any advantage the cattle may have in the droppings.

FEEDING RECORD.

The following table presents a complete feeding record for each breed during the ninety day test period, together with a condensed summary for all of the breeds collectively. The record of the Shropshire yearlings is also presented, and in addition division is made grouping seven of the breeds of lambs separately.

Complete feeding record for all breeds.	Shelled corn.	Oats.	Bran.	Oil meal.	Turnips.	Mangels.	Clover hay.	Pea hay.	Timothy hay.	Total gain.	Average gain per head daily.	Total dry matter.	Pounds of dry dry matter per pound of gain.	Total cost of feed.	Cost of feed per pound of gain
10 Southdown lambs :															
January	237	238	47	47	99	170	318	124	12	135	.43	950.7	7.04	3.73	2.80
February	254	254	32	63	.....	261	460	40	.....	125	.43	993.5	7.95	3.97	3.18
March	260	261	32	64	.....	204	557	.....	.....	145 5	.48	104 06	7 21	4.14	2 84
Totals and averages	751	753	111	174	99	635	1,364	164	12	05.5	.45	2,990.2	7.38	11.84	2 93
10 Shropshire lambs :															
January	249	247	50	49	112	167	328	124	12	123	.39	957.7	7 78	3 78	3 7
February	273	273	34	68	.....	269	455	40	.....	136	.46	1,030 4	7.57	4.14	3 4
March	286	287	36	72	.....	231	564	.....	.....	170.5	.56	1,093.6	6.43	4 45	2 61
Totals and averages.	808	807	120	189	112	670	1,317	161	12	429.5	.48	3,081 7	7.18	12 37	2 88
10 Oxford lambs :															
January	288	288	57	57	115	193	419	124	14	167	.54	1,123 5	6 72	4.42	2 64
February	311	312	39	78	.....	299	548	40	.....	131	.45	1,194 8	9 12	4 79	3 66
March	332	333	41	82	.....	293	646	.....	.....	174.5	.58	1,284.2	7.38	5 10	2 92
Totals and averages.	931	933	137	216	115	985	1,613	164	14	472.5	.52	3,602.5	7 40	14.31	3.03
10 Suffolk lambs :															
January	294	295	59	59	121	186	439	124	14	181	.58	1,144.1	6 32	4 55	2 51
February	321	321	40	80	.....	299	561	40	.....	143	.49	1,225 4	8.56	4 91	3.43
March	335	335	42	84	.....	294	654	.....	.....	172.5	.58	1,298.3	7.55	5.20	3 01
Totals and averages.	950	951	141	223	121	779	1,654	164	14	496.5	.55	3,667 8	7 40	14 66	2 95
10 Lincoln lambs :															
January	280	282	57	56	115	193	445	124	16	142	.46	1,134.8	7 99	4 45	3 13
February	310	310	39	77	.....	299	571	40	.....	155	.53	1,210 7	7 81	4 83	3 12
March	338	338	42	84	.....	294	644	.....	.....	202 5	.68	1,294.1	6.40	5.19	2 55
Totals and averages.	928	930	138	217	115	786	1,660	164	16	499 5	.55	3,639.6	7 29	14 47	2 89
9 Leicester lambs :															
January	219	219	50	48	105	171	318	124	12	88	.31	921 9	10.47	3 63	4 12
February	274	274	34	69	.....	273	508	40	.....	160	.61	1 078.2	6 74	4 30	2 70
March	300	300	38	76	.....	364	587	.....	.....	176	.65	1,176.3	6.68	4 62	2 62
Totals and averages.	793	793	122	193	105	806	1,443	164	12	424	.52	3,176.4	7 49	12.55	2.93

10 Cotswold lambs:															
January	280	282	57	56	127	181	447	123	16	155	.5	1,135 2	7.32	4.45	2.87
February	310	310	39	77	.....	299	572	40	.. ..	182	.63	1,211.5	6 62	4.84	2.64
March	338	338	42	84	.....	294	646	... ...	.....	218.5	.72	1,286.8	5.90	5.20	2.38
Totals and averages.	928	930	138	217	127	774	1,665	163	16	556 5	.62	3,633.5	6.53	14 49	2.60
10 Dorset lambs:															
January	272	272	53	52	123	184	440	124	15	128	.43	1,106.1	8 64	4.32	3.37
February	286	287	36	72	.....	299	558	40	.....	130	.45	1,150 5	8.85	4 30	3.31
March	301	302	38	76	.....	364	572	.....	.....	178	.66	1,166 2	6 55	4.69	2.64
Totals and averages	859	861	127	200	123	847	1,570	164	15	436	.48	3,422 8	7.85	13.31	3 05
10 Merino lambs:															
January	243	242	47	48	108	170	285	118	10	102	.33	900.8	8.83	3 58	3 51
February	238	236	29	59	.....	261	284	37	.....	104	.36	803.4	7.72	3.30	3.17
March	201	200	25	50	.....	204	307	.....	.....	52	.17	708 3	13.62	2.88	5 54
Totals and averages.	680	678	101	157	108	635	876	155	10	258	.29	2,412.5	9.35	9.76	3.78
10 Crossbred lambs:															
January	243	243	48	48	120	158	295	121	12	132	.43	915.1	6.93	3 63	2.75
February	239	240	30	60	....	261	293	32	.....	107	.37	814.6	7.61	3.34	3.12
March	231	231	29	58	.....	204	417	.....	.....	131	.43	866.7	6.61	3 49	2.66
Totals and averages.	713	714	107	166	120	623	1,005	153	12	370	.41	2,596.4	7.02	10.46	2.82
10 Range lambs:															
January	184	181	36	36	78	119	280	121	11	78	.25	764.4	9.80	2.97	3.80
February	191	191	24	48	.....	174	345	38	....	131	.45	751.4	5 73	3.00	2.29
March	197	198	24	49	.....	136	388	.... ..	.....	124	.41	762.1	6.14	3.05	2.46
Totals and averages	572	570	84	133	78	429	1,013	159	11	333	.37	2,277.7	6.84	9.02	2.71
Grand total of all breeds	8,913	8,920	1,326	2,085	1,223	7,769	15,211	1,778	144	4,678	.48	34,501.5	7.37	137.24	2 93
Grand total of first seven breeds	6,089	6,097	907	1,429	794	5,135	1,747	1,147	96	3,281	.53	23,791.9	7.25	94 69	2.82
5 Shopshire yearlings:															
January	169	167	34	33	73	113	151	93	6	59	.39	594.3	10 07	2.38	4.
February	152	153	19	38	.....	174	186	30	.... ..	38	.26	527.4	13.88	2.16	5.70
March	143	143	18	36	.....	136	283	.....	.....	52.5	.35	516.6	9.93	2.10	4.
Totals and averages.	464	463	71	107	73	423	570	123	6	149.5	.33	1,638.3	11.	6 64	4.44

The average daily gain made by the whole number of lambs is .48 of a pound per head, and the average made by the seven breeds, the most prominent mutton breeds, grouped separately, is .53, or a little over half a pound per head. During two months, January and February, that the sheep were on feed, the water was weighed to them in order to note any differences that might appear in amount of water drunk, and the relation of water to dry matter in the amount of feed consumed by each breed. The record is as follows:

	Pounds of water drank daily per 1,000 lb live weight.	Total water consumed daily per 1,000 lb. live weight.	Pounds of dry matter consumed daily per 1,000 lb. live weight.	Pounds of water consumed per lb dry matter.
Southdown	41.26	53.13	31.10	1.71
Shropshire	38.93	51.23	29.14	1.73
Oxford	40.04	50.77	28.85	1.76
Suffolk	39.42	50.52	29.76	1.70
Lincoln	41.22	51.90	28.86	1.80
Leicester	36.86	46.60	25.45	1.83
Cotswold	41.32	52.04	28.94	1.80
Dorset	42.57	55 11	33.05	1.70
Merino	30.00	42.68	30.70	1.38
Cross-bred	36 02	48.81	31.01	1.57
Range	30.80	41.45	31.13	1.33
Yearling Shropshires	24.87	33.70	21.04	1.60
Averages	37.61	48.71	29.07	1.67

No prominent variation is found among the breeds of sheep, but some interesting data is afforded by comparing the dry matter per 1,000 pounds of live weight consumed by the sheep and the cattle during the same months (January and February). The daily ration of the cattle referred to in the preceding pages contained 19.6 pounds of dry matter per 1,000 pounds of live weight Both sheep and cattle were on full feed. The sheep made a daily gain of 3.73 pounds per 1,000 pounds of live weight, and the cattle 2.14 pounds.

In summing up this comparison we find that while the sheep ate about twenty per cent. more per 1,000 pounds live weight than the cattle, they also gained nearly seventy-five per cent. more.

Cost of gain.

The feeds used in this experiment were rated at the following prices, based upon commercial values prevailing in the local market at that time:

Bran	40	cents per 100
Oats	40	" "
Shelled corn	28.5	" "
Oil meal	90	" "
Hay	28	" "
Turnips and mangels	5	" "

At these prices for grain it was found that the total gain of 4,678 pounds made by the 109 lambs was produced at a cost of 2.93 cents per pound for feed consumed. The first seven breeds made a total gain of 3,281 pounds at a cost of 2.88 cents a pound. The five yearlings made a total gain of 1,405 pounds, at a cost of 4.44 cents a pound.

In comparing the cost of gain with that of the cattle, we find that the sheep again make the better showing; the average cost for the cattle in the experiment referred to

as shown in another place in this bulletin, being 3.57 cents on a ration corresponding quite closely, and rated at nearly similar prices.

The cost of making a pound of gain on the lambs varied considerably in the several breeds. Some of this is doubtless due to individuality, but it was designed in using ten well selected animals to overcome the factor of individuality as far as possible. While it is well nigh impossible to wholly eliminate the factor of individuality, it is also clear that there are well established distinctions in the mutton characteristics of a number of the breeds.

The Market Comparison.

The lambs were loaded at the station yards about noon April 1st, and arrived in Chicago about 5 a.m the following day. At about 11 a.m. they were sold and weighed up at the following weights and prices :

	Weight.	Price.		Weight.	Price.
10 Southdown lambs	1,150	$4.75	10 Cotswold lambs	1,420	$4 50
10 Shropshire "	1,210	4 62½	10 Dorset "	1,210	3.75
10 Oxford "	1,420	4.50	10 Merino "	940	4.25
10 Suffolk "	1,460	4.25	10 Cross-bred "	1,010	4 50
10 Lincoln "	1,420	4.50	10 Range "	910	4.50
9 Leicester "	1,380	4.50	5 Shropshire yearlings	880	4.25

The shipment was consigned to Wilson Bros. & Farrely and sold to Swift & Co. Mr. Matteson, head sheep buyer for Swift & Co., was asked to bid on each bunch strictly on its merits and on the basis of a carload of each kind. Other bids were also received on the same basis, but Swift & Co's. offer being the highest was accepted.

It will be seen by comparing the selling weights with the final home weights that the shrink in shipping was a heavy one. This is attributed to the fact that the home weights were taken on full feed and water, and further that the first and second days of April while the sheep were en route and on the market, were bitter cold days. The cars were made warm enough for the sheep to ride comfortably but when they were unloaded in Chicago and driden to a cold shed, and being clipped, they not only suffered from the cold but refused to eat or drink anything while in the yards.

The sheep were killed on the following day, April 3rd, and dressed out the following percentages of mutton, cold weight :

10 Southdown lambs	55.4	10 Cotswold lambs	54.9
10 Shropshire "	56.3	10 Dorset "	52.6
10 Oxford "	55.2	10 Merino "	51.8
10 Suffolk "	53.6	10 Cross-bred "	53.7
10 Lincoln "	55.7	10 Range "	55.6
9 Leicester "	57.6	9 Shropshire yearlings	62.3

The following table presents the detailed record of the slaughter test, giving the net weight of all of the several parts, internal organs and offal and also the percentage that each constitutes of the whole :

The percentage of dressed mutton does not correspond in the slaughter test table to the record given on a preceding page, but Swift & Co. explain that the variation is due to the fact that the "slaughter test" percentages are computed from the warm weights, while the others are cold weight percentages.

Slaughter Tests.

—	10 Southdown lambs.		10 Shropshire lambs.		10 Oxford lambs.		10 Suffolk lambs.		10 Lincoln lambs.		9 Leicester lambs.	
	Weights	%	Weights	%	Weights	%	Weights	%	Weights	%	Weights	%
	lbs.		lbs.		lbs.		lbs.		lbs.		lbs.	
Mutton	651	59.24	696	58.78	800	60.24	800	58.36	808	59.50	815	62.88
Pelts	100	9.09	104.5	8.83	131.	9.86	121.	8.82	148.5	10.94	118	9.11
Blood	42 5	3.88	48.	4.05	54.5	4.11	58.	4.23	57.5	4.23	53.5	4.12
Heads	29.5	2.68	29.5	2.49	38.	2.86	39	2.84	35 5	2.62	32.5	2.51
Horns												
Tongues	4.5	.42	4.	.34	5.5	.41	5.5	.41	5.	.37	4.5	.35
Feet	6.	.54	6.5	.55	8.5	.64	8.	.59	8.	.58	7.5	.59
Caul fat	38.25	3.48	44.5	3.76	40.	3.01	46.5	3 39	43.	3.09	41.	3.16
Bed tallow	3.5	.32	2.5	.22	4.	.3	4.	.29	3.5	.25	3.5	.27
Paunches empty	32.5	2.95	35.5	2.99	41.5	3.13	44.	3.21	39.5	2.91	38.	2.93
" waste	65.5	5.98	82.5	6.97	63.	4.76	99.5	7.26	73.	5.39	55.	4.25
" fat	3.5	.32	3.5	.3	3.5	.26	4.	.28	4.	.29	3.5	.28
Intestines empty	18.5	1.68	18.5	1.56	21.	1.58	22.	1.61	21.	1.54	18.	1.39
" waste	40.	3.64	41.5	3.51	47.5	3.58	49.5	3.61	45.5	3.35	44.5	3.43
" fat	14.5	1.32	15.5	1.31	15.	1.13	19.	1.39	14.5	1.07	14.5	1.11
Livers	20.5	1.86	23.5	1.98	21.	1.58	18.	1.31	21.	1.54	21.5	1.66
Hearts	4.5	.42	5.	.42	5.5	41	5.5	.41	5.5	.42	6.	.47
Lungs and windpipe	19.	1.73	16.5	1.39	22.5	1.69	21.	1.53	19.	1.50	14.5	1.11
Heart fat	1.5	.13	2.	.17	1.5	.11	2.	.14	2.	.14	1.5	.11
Pluck fat	3.5	.32	4.5	.38	4.5	.34	4.5	.32	4.	.28	3.5	.27
Totals	1099.	100.	1184.	100.	1328.	100.	1371.	100.	1358.	100.	1296.	100.

Slaughter Tests.—*Continued.*

—	10 Cotswold lambs.		10 Dorset lambs.		10 Merino lambs.		10 Cross-bred lambs.		10 Range lambs.		5 Shropshire yearlings.	
	Weights	%	Weights	%	Weights	%	Weights	%	Weights	%	Weights	%
	lbs.		lbs.		lbs.		lbs.		lbs.		lbs.	
Mutton	795	58.89	666	57.27	496	56.11	554	57.35	516	56 16	560	66.10
Pelts	141	10.44	93	8.	92	10.41	108 5	11.23	102	11 09	70	8.26
Blood	55.5	4.11	49	4.21	40	4.53	42	4 35	39 5	4 29	32	3.76
Heads	37.	2 74	37.75	3.25	33.5	3.79	26 5	2 74	25.5	2.77	19	2.24
Horns			25.	2.15	7.	.79						
Tongues	5.	.37	4 75	.41	4.5	.51	4.	41.	3.5	.38	2.5	.29
Feet	8.5	.63	7.50	.65	5.5	.62	6.	.62	6.	.66	3.	.35
Caul fat	41.	3.04	25.5	2.19	38.	4.30	42.5	4.40	39.	4.24	36.	4.25
Bed tallow	3.	.22	3.	.26	2.5	.28	2.5	.26	2.5	.27	2.	.23
Paunches empty	43 5	3.22	39.	3.35	26.5	3.	27.	2.80	23.	2 50	19.5	2.30
" waste	85.5	6.33	78.	6.71	36.5	4.13	43.	4.45	55.5	6.09	31.	3.66
" fat	3.5	.26	2.5	.21	3.	.34	3.	.31	3.5	.38	3.	.35
Intestines empty	21.	1.56	21.	1.80	15.	1.70	25.5	2 64	15.5	1 68	11 5	1.36
" waste	47.5	3.52	46.5	4.	30.5	3.45	25.5	2.64	39.5	4 29	16.	2.08
" fat	13.	.97	13.5	1.16	16.	1.81	15.5	1.60	11.5	1.25	12.	1.41
Livers	22.	1.63	18.5	1.59	15.5	1.75	17.	1.76	14.	1.52	13.5	1 53
Hearts	5.5	.41	5.	.43	4.	.45	4.5	.47	4.	.42	4.	.47
Lungs and windpipe	16.5	1.22	17.5	1.50	14.	1.58	12.5	1.29	14.	1.52	7.	.82
Heart fat	1.5	.11	1.5	.13	2.25	.25	1.5	.16	1.5	.16	2.5	.27
Pluck	4.	.29	8 5	.73	1 75	.20	5.5	.57	3.	.33	2.5	.27
Totals	13.50	100.	11 63	100.	884.	100.	966.	100.	919.	100.	847.	100.

SOUTHDOWN. COTSWOLD.

MERINO. LINCOLNS.

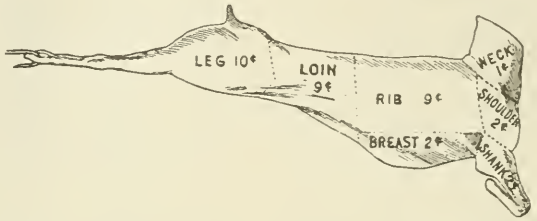
BLOCK TEST.

——	—	Weight.	Per cent.	Price.	Amount.
		lbs.		c.	$ c.
10 Southdown lambs cut into saddles and racks	10 saddles	315	49.05	8	25 20
	10 racks	320	50.97	4	12 80
Total of 10 lambs		635	100.		38 00
2 Southdown lambs cut into legs, ribs, loins and chucks	2 pair legs	40	29.85	10	4 00
	2 ribs	34	25.37	9	3 06
	2 loins	25	18.66	9	2 25
	2 chucks	35	26.12	2	70
Total of 2 lambs		134	100.		10 01
10 Shropshire lambs cut into saddles and racks	10 saddles	352	50.94	8	28 16
	10 racks	339	49.06	4	13 56
Total of 10 lambs		691	100.		41 72
2 Shropshire lambs cut into legs, ribs, loins and chucks	2 pair legs	32	29.36	10	3 20
	2 ribs	26	23.85	9	2 34
	2 loins	21	19.26	9	1 89
	2 chucks	30	27.33	2	60
Total of 2 lambs		109	100.		8 03
10 Oxford lambs cut into saddles and racks	10 saddles	394	50.	8	31 52
	10 racks	394	50.	4	15 76
Total of 10 lambs		788	100.		47 28
2 Oxford lambs cut into legs, ribs, loins and chucks	2 pair legs	51	31.87	9	4 59
	2 ribs	37	23.12	8	2 96
	2 loins	30	18.75	8	2 40
	2 chucks	42	26.26	2	84
Total of 2 lambs		160	100.		10 79
10 Suffolk lambs cut into saddles and racks	10 saddles	393	50.38	8	31 44
	10 racks	387	49.62	4	15 48
Total of 10 lambs		780	100.		46 92
2 Suffolk lambs cut into legs, ribs, loins and chucks	2 pair legs	47	29.19	9	4 23
	2 ribs	37	22.98	8	2 96
	2 loins	33	20.50	8	2 64
	2 chucks	44	27.32	2	88
Total of 2 lambs		161	100.		10 71
10 Lincoln lambs cut into saddles and racks	10 saddles	400	50.37	8	32 00
	10 racks	394	49.63	4	15 76
Total of 10 lambs		794	100.		47 76
2 Lincoln lambs cut into legs, ribs, loins and chucks	2 pair legs	45	30.61	9	4 05
	2 ribs	35	23 81	8	2 80
	2 chucks	39	26.54	2	78
	2 loins	28	19.04	8	2 24
Total of 2 lambs		147	100.		9 87
9 Leicester lambs cut into saddles and racks	9 saddles	401	50.	8	32 08
	9 racks	401	50.	4	16 04
Total of 9 lambs		802	100.		48 12

BLOCK TEST.—*Concluded.*

——	——	Weight.	Per cent.	Price	Amount.
2 Leicester lambs cut into legs, ribs, loins and chucks	2 pair legs	48	29.09	9	4 32
	2 ribs	38	23.03	8	3 04
	2 loins	35	21.21	8	2 80
	2 chucks	44	26.67	2	88
Total of 2 lambs		165	100.		11 04
10 Cotswold lambs cut into saddles and racks	10 saddles	386	49.36	8	30 88
	10 racks	396	50.64	4	15 84
Total of 10 lambs		782	100.		46 72
2 Cotswold lambs cut into legs, ribs, loins and chucks	2 pair legs	48	30.19	9	4 32
	2 ribs	38	23.90	8	3 04
	2 loins	30	18.87	8	2 40
	2 chucks	43	27.04	2	86
Total of 2 lambs		159	100.		10 62
10 Dorset lambs cut into saddles and racks	10 saddles	316	47.95	8	25 28
	10 racks	343	52.05	4	13 72
Total of 10 lambs		659	100.		39 00
2 Dorset lambs cut into legs, ribs, loins and chucks	2 pair legs	41	30.15	8	3 28
	2 ribs	33	24.26	7½	2 47
	2 loins	25	18.38	7½	1 88
	2 chucks	37	27.21	2	74
Total of 2 lambs		136	100.		8 37
10 Merino lambs cut into saddles and racks	10 saddles	257	53.54	8	20 56
	10 racks	223	46.46	4	8 92
Total of 10 lambs		480	100.		29 48
2 Merino lambs cut into legs, ribs, loins and chucks	2 pair legs	30	29.41	9	2 70
	2 ribs	22	21.57	8	1 76
	2 loins	22	21.57	8	1 76
	2 chucks	28	27.45	2	56
Total of 2 lambs		102	100.		6 78
10 Cross-bred lambs cut into saddles and racks	10 saddles	270	49.64	8	21 60
	10 racks	274	50.36	4	10 96
Total of 10 lambs		544	100.		32 56
2 Cross-bred lambs cut into legs, ribs, loins and chucks	2 pair legs	31	27.93	10	3 10
	2 ribs	25	22.52	8½	2 13
	2 loins	25	22.52	8½	2 13
	2 chucks	30	27.03	2	60
Total of 2 lambs		111	100.		7 96
10 Range lambs cut into saddles and racks	10 saddles	267	52.87	6	21 36
	10 racks	238	47.13	4	9 52
Total of 10 lambs		505	100.		30 88
2 Range lambs cut into legs, ribs, loins and chucks	2 pair legs	31	29.25	9	2 79
	2 loins	24	22.64	8	1 92
	2 ribs	23	21.70	8	1 84
	2 chucks	28	26.41	2	56
Total of 2 lambs		106	100.		7 11

The block test was conducted after the carcass had cooled in the refrigerator about five day. In making this test, the carcasses were all first cut through the center between the "loin" and "rib," leaving one rib on the loin cut. The front half of the carcass when cut in this manner is called the "rack" and the rear half the "saddle," and the saddle is usually rated worth about twice as much per pound as the rack. Before the lambs were cut in this manner and the weights taken, Mr. Nathaniel Swift personally selected two representative carcasses from each lot of lambs for the complete cutting test, as indicated in the diagram showing "leg," "loin," "rib," "breast," "shank," "shoulder" and "neck" cuts, except that the breast, shoulder, shank and neck went together as one cut termed "chuck," in which form this portion of the carcass is usually sold to the retail dealers.



Mr. Swift also went carefully over all of the lambs and put the prices on the meat that are given in the block test report. The report on the ten lambs of each breed consists of the first weights that were taken after cutting only into saddles and racks. The portion that follows is the result of the complete test that was made on two representative lambs from each lot, and the prices put on each cut according to its market value. For convenience, the rack and saddle cuts were rated uniformly at four and eight cents a pound, and these figures do not bring out the distinction in quality that is apparent from the prices given in the more accurate comparison that follows in the values assigned to the two lambs selected from each breed. The prices shown in the diagram are those put upon the Southdown and Shropshire mutton.

Following this test, the ribs, loin and leg cuts of each lot of lambs were photographed on the block in such manner as to show the thickness and relative size of these cuts, and also the difference in character of meat, particularly with reference to fat and lean. The yearling Shropshires were not included in the block test, owing to the fact that the dealers in heavy carcasses of mutton use a different method of cutting, and consequently to put these sheep into such a test would have involved loss in value of the product. It was for the same reason that only two lambs of each lot were included in the more complete cutting test, though with the rack and saddle cuts taken from all lambs, and in addition, two representative lambs impartially and intelligently selected as before noted, it is believed that these figures represent the total average for each lot with sufficient accuracy.

In these views of the mutton on the block, the rib and loin cuts are placed so as to show a section of each end of the cuts. Each group of meat represents the leading cuts taken from two lambs.

The value of the mutton of each breed as estimated by Mr. Swift, in connection with the cost of the dressed mutton, furnishes a basis for comparison of the returns made by the different breeds. Swift & Co., after crediting the value of all of the offal, tallow, pelts and other items, computed the cost of dressed mutton for each breed, and from the other data furnished we have computed the average selling price of each breed. These results are here presented :

LEICESTER. RANGE.

OXFORD. SHROPSHIRE.

—	Dressed cost price.	Dressed selling price.	Difference.
Southdowns	6.66	7.50	.84
Shropshires	6.31	7.46	1.15
Oxfords	6.53	6.71	.18
Suffolks	6.20	6.50	.30
Lincolns	6.39	6.69	.30
Leicesters	6.20	6.68	.48
Cotswold	6.50	6.69	.19
Dorsets	5.27	6.15	.88
Merinos	5.82	6.75	.93
Cross-breds	6.20	7.16	.96
Range	5.79	6.74	.95
Averages	6.17	6.82	.65

The difference, or apparent profit, as before stated, is based upon the prices assigned to the separate lots of mutton by Mr. Swift. We believe, however, that the mutton actually sold for somewhat less than this on account of there being but a small quantity of each lot and all, or nearly all of it, being sold together, though that does not affect the comparison of the breeds. The prices reported both on live weight and dressed products represent the nearest estimate of actual values, based upon the judgment of experts, that could be arrived at. It will be observed that the cost price, the percentage of dressed mutton and the value of the dressed product are the controlling factors in determining the net margin of profit to the packer.

The Wool.

The sheep in this experiment, as before stated, were all sheared from March 17th to 23rd and the weight of each fleece and aggregate for the breed taken. In the latter part of June this wool with lot and fleece numbers but no breed names attached, was sent to H. T. Thompson & Co., wool merchants of Chicago, with instructions to report actual market value in its natural condition, then scour it and determine its weight in condition for manufacturing, report shrinkage in scouring, and its final value in the scoured condition. These results, together with the average yield and age of the sheep, are here presented :

—	Date of shearing.	Average age of fleece in days.	Average weight of fleece.	Value per lb. in natural condition.	Shrinkage in scouring.	Value per lb. in scoured condition.	Average value of fleece per head.*
			lbs.	cts.	per cent.	cts.	$ cts.
10 Southdown lambs	March 23....	366	6.75	11½	54¼	26	75
10 Shropshire "	" 23....	363	8.75	11	56¼	25	98
10 Oxford "	" 21-23 ...	365	10.95	12¾	47	24	1 44
10 Suffolk "	" 21....	384	7.65	11	54¼	24	86
10 Lincoln "	" 17-20....	332	12.85	13¾	40	23	1 79
9 Leicester "	" 18-20....	348	11.5	14¾	38½	24	1 76
10 Cotswold "	" 17-20....	334	12.65	13	43¾	23	1 66
10 Dorset "	" 18-20....	355	6.825	10¾	55	24	77
10 Merino "	" 18 20....	359	9.5	09¾	67½	30	1 00
10 Crossbred "	" 18-20....	334	7.5	11¾	53	25	90
10 Range "	" 20 21....	321	5.125	12½	48	24	67
10 Shropshire yearlings	" 21....	313	10.5	12¾	49	24	1 34

* The values in this column are obtained by dividing the value of each wool by the number of sheep. The Chicago weights varied a little from the weights taken from date of shearing.

CROSS BRED. DORSET.

SUFFOLK.

In submitting their report Messrs. H. T. Thompson & Co. wrote: "We would state for your information that the market is in a very unsatisfactory condition, and there is a great difference in regard to values of wool at this writing. We have exercised our best judgment, and do not believe we are far out of the way. We examined the wool in the grease carefully, and we can also state to you that we know our shrinkages to be correct. As your sheep have been very well fed, your wool naturally shows a little more shrinkage than the ordinary run of such wool. We will also state to you that there was quite a large percentage of seedy, chaffy wool in this stock. It amounted to much more than you probably realized. We sorted the wool and obtained the following amounts of seedy, chaffy and tags from the different lots:

Lot 1 (Southdown)*	3 lbs.	Lot 7 (Leicester)	19 lbs.
" 2 (Shropshire)	13 "	" 8 (Dorset)	6 "
" 3 (Oxford)	25 "	" 9 (Merino)	5 "
" 4 (Suffolk)	4 "	" 10 (Cross-bred)	3 "
" 5 (Lincoln)	31 "	" 11 (Range)	7 "
" 6 (Cotswold)	22 "	" 12 (Yearlings)	6 "

We would for your information make the following report in regard to the different lots as received in the grease by us:

Lot 1. Medium clothing wool. Fleece No. 9 best in lot in regard to staple. Fleece Nos. 4 and 8 lowest in grade.

Lot 2. Low medium in grade. All combing with the exception of fleeces Nos. 19 and 20. We should judge from fleece No. 19 that the sheep had been sick some time during the winter. It is a good lot of wool; Nos. 15 and 16 being the best fleeces in the lot.

Lot 3. All good low combing. Fleece No. 22 we consider the best bred of any one in the lot. We consider this very good work of its kind.

Lot 4. All high quarter-blood clothing wool. No strength of staple whatever. Fleeces Nos. 33 and 34 are lowest in grade. Fleece No. 35 is very seedy. There was not a combing fleece in this lot.

No. 5. All what we term braid wool. Very good of its kind. Fleeces Nos. 43, 47, 49 and 50 extremely low in grade.

Lot 6. About such wool as Lot 5. Fleece No. 54 we find cotted or fleece grown. Fleece No. 53 was seedy.

Lot 7. Low or common combing. Fleece No. 70 cotted or fleece grown. Nos. 61 and 63 are the best in regard to condition. Nos. 64 and 69 very low in grade.

Lot 8. Low medium or high quarter-blood. Mostly clothing wool. Fleeces Nos. 71 and 77 could be classed as combing. Fleece No. 77 best fleece in lot.

Lot 9. Fine delaine. Fleece No. 81 best in condition but lowest in grade. Fleeces Nos. 84 and 86 were the finest in grade.

Lot 10. Medium. Mostly combing wool. Good conditioned but short in staple. Fleece No. 10 best condition and best staple.

Lot 11. A short staple medium wool. In good condition so far as shrinkage goes. Fleece No. 107 has the appearance of a dead fleece. This entire lot looks as though the sheep had been dipped. This, however, improved the wool so far as shrinkage goes, and has not materially injured the stock.

Lot 12. All coarse or quarter-blood clothing wool.

In explanation of values placed on the different lots of scoured, would state that at this particular time there is a fairly good demand for braid or low wools which brings their scoured value very close to that of medium or even fine medium."

On receiving this report it was feared that some of the terms made use of might not be clear to those not acquainted with the wool trade, and an explanation was requested of the significance of the statements "no strength of staple whatever" in reference to Lot 4, and "extremely low in grade" and "very low in grade" in reference to Lots 5 and 7, while it was also stated that Lot 5 was good wool of its kind. In response to this request Messrs. Thompson & Co. wrote:

* The breed names were inserted by the writers. No breeds were known by Thompson & Co.

"The term 'quarter-blood' as used in our letter, does not refer to the blood of the sheep but it is a common term in the wool trade, and refers to a coarse grade of wool, and is known in all the markets as 'quarterblood,' although the fleeces may have been taken from thoroughbred sheep or from several crosses.

"The term 'clothing' wool is used to distinguish it from 'combing' wool, and when speaking with a wool man he would at once know what was meant. That is why we used the term 'No strength of staple whatever.' In other words, it was a clothing wool and not a long, strong staple such as could be classed as 'combing' wool. There is not at this particular time the relative difference between 'clothing' wool and 'combing' wool that usually exists. We have seen the time within the past few years when the difference between the two amounted to several cents a pound.

"In regard to Lot 5, we make use of the following expression: 'Very good of its kind.' And we did not wish to reflect on the kind, for it is to-day a class of wool that is in very good demand. Yet fashions may change at any time, so that it would be either considerably higher or lower in comparison with other kinds of wool.

"It is a fact that fleeces 43, 47, 49 and 50 were very low, coarse grade but as above stated, is in very good demand for 'braid' use. For the kind, viz., very coarse or 'braid' wool, these fleeces are all right."

In reference to the amount of seedy wool and tags in the several lots, we have to report that all of the tags and dirt were purposely included in each lot for the sake of a complete comparison. All of the hay fed during the experiment was carred into the pens in sacks, and but little dirt could enter the fleeces in this manner. The racks were also so constructed as to prevent the lambs from injuring their fleeces or collecting dirt. The chaff and dirt that lodged in the wool doubtless came from the straw used for bedding. This was used liberally, but care was taken in putting it in, to keep it from their backs. A strong wind prevailed for several days during the shearing and some litter adhered to the wool. The shearing was done on a canvas stretched in the yard in order to avoid the disturbance of moving the lambs to another building while the feeding test was in progress. The treatment affecting the wool was uniform for all breeds.

The report on unclean wool does not represent the amount of dirt indicated by the figures, but the amount that contained chaff seed or sweat locks. Shropshire lamb No. 19 was unwell for a time as suggested in the report made on this lot, but in writing later concerning that matter Thompson & Co. stated: "The injured fleece referred to in Lot 2 did not materially alter the value of this lot. It, however, would cut a figure if the entire lot had been in the same condition." Lot No. 11 was dipped in November as already explained.

The value of wool in its natural condition is calculated from its scoured value and shrinkage. In reference to this matter Thompson & Co. wrote:

"The prices given you for the scoured pound were as near correct as it was possible for us to give them at that time, but we do believe that we could have obtained you a little more money for the wool in the grease than we or anyone else could possibly obtain on the scoured basis, but the relative increase in value, or rather market value, between the wool in the grease and in the scoured state would be practically the same on all lots. A large percentage of the woolen manufacturers of this country prefer to sort and scour their own wool, and are willing on this account to pay a little more for the scoured pound made by themselves than they will pay for the scoured article on the market."

From this it will be seen that had the wool been sold in the grease instead of scoured, a little more would have been realized from each lot, but for the purposes of this investigation the scouring was desirable and the comparison between the breeds was in no way disturbed.

In the following pages we present an illustration of three representative animals from each breed. These illustrations were reproduced from photographs made of each animal by John W. Hills, of Delaware, Ohio. In making these Mr. Hills had instructions to follow nature closely and make no exaggeration of merit or changes in any respect in the reproduction of the photographs, other than a correction of some minor inaccuracies of the camera. The illustrations would have been made direct from the photographs had it not been for the difficulty of arranging the groups in the desired position. A front, side, and rear view of separate animals of each breed is shown. This was done by photographing the lambs in just the position now shown, and afterward combining them on one plate. That Mr. Hills' work has been faithfully and impartially done is evidenced by a comparison of the plates with the original photographs. Below each illustration is a summary of the record made by the lambs of that breed. Further comment and deductions from the results of this experiment are withheld until investigation now in progress shall have been completed.

THREE REPRESENTATIVE SOUTHDOWNS.

No. 4.—Bred by John Jackson & Sons, Abingdon, Ont.
No. 5.—Bred by William Martin, Binbrook, Ont.
No. 9.—Bred by James Scott, Aberfoyle, Ont.

Record of Breed.

Average age of the ten lambs	374 days.
Average weight March 31 (shorn)	125 lbs.
Average gain per day during the experiment	0.45 lbs.
Average number pounds dry matter per pound gain	7 38 lbs.
Average cost of feed per pound of gain	2 93 cents.
Selling price on Chicago market	$4.75
Average per cent. of dressed mutton	55.4%
Average weight of fleeces	6.75 lbs.
Average age of fleece	366 days.
Average value of fleece	75 cents.
Average yearly weight of fleece	6.75 lbs.
Average yearly value of fleece	75 cents.
Average weight of wool per 1,000 pounds live weight	54 lbs.
Average value of wool per 1,000 pounds live weight	$6 03
Value of wool per pound in natural condition	11½ cents.
Average shrinkage in scouring	55¼%
Value of wool per pound in scoured condition	26 cents.

THREE REPRESENTATIVE SHROPSHIRES.

No. 11.—Bred by Hon. John Dryden, Toronto, Ont.
No. 18.—Bred by Richard Gibson, Delaware, Ont.
No. 12.—Bred by Joseph Edgerton, Nassau, Iowa.

Record of Breed.

Average age of the 10 lambs	371 days.
Average weight of the ten lambs March 31 (shorn)	125 lbs.
Average gain per day during the experiment	0.48 lbs.
Average dry matter per pound gain	7.18 lbs.
Average cost of feed per pound gain	2.88 cents.
Selling price on Chicago market	$4.62½
Average per cent. of dressed mutton	56.3%
Average weight of fleece	8 75 lbs.
Average age of fleece	366 days.
Average value of fleece	98 cents.
Average yearly weight of fleece	8.75 lbs.
Average yearly value of fleece	98 cents.
Average weight of wool per 1,000 pound live weight	64.86 lbs.
Average value of wool per 1,000 pounds live weight	$7.23
Value of wool per pound in natural condition	11 cents.
Average shrinkage in scouring	56¼%
Value of wool per pound in scoured condition	25 cents.

THREE REPRESENTATIVE OXFORDS.

No. 30.—Bred by Henry Arkell, Arkell, Ont.
No. 29.—Bred by Henry Arkell, Arkell, Ont.
No. 23.—Bred by John Phin, Hespeler, Ont.

Record of Breed.

Average age of the ten lambs	374 days.
Average weight March 31 (shorn)	155 lbs.
Average gain per day during the experiment	0.52 lbs.
Average dry matter per pound gain	7.40 lbs.
Average cost of feed per pound gain	3.03 cents.
Selling price on Chicago market	$4.50
Average per cent of dressed mutton	55.2%
Average weight of fleece	10.95 lbs.
Average age of fleece	365 days.
Average value of fleece	$1.44
Average yearly weight of fleece	10.95 lbs.
Average yearly value of fleece	$1.44
Average weight of wool per 1,000 pounds live weight	70.5 lbs.
Average value of wool per 1,000 pounds live weight	$9 27
Value of wool per pound in natural condition	$12\frac{3}{4}$ cents.
Average shrinkage in scouring	47%
Value of wool per pound in scoured condition	24 cents.

THREE REPRESENTATIVE SUFFOLKS.

No. 37.—Bred by Ontario Agricultural College, Guelph, Ont.
No. 34.—Bred by W. B. Coburn, Milton, Ont.
No. 39.—Bred by W. B. Coburn, Milton, Ont.

Record of Breed.

Average age of ten lambs	394 days.
Average weight March 31 (shorn)	159 lbs.
Average gain per day during the experiment	0.55 lbs.
Average dry matter per pound gain	7.40 lbs.
Average cost of feed per pound gain	2.95 cents.
Selling price on Chicago market	$4 25
Average per cent. dressed mutton	53 6%
Average weight of fleece	7.65 lbs.
Average age of fleece	383 days.
Average value of fleece	86 cents.
Average yearly weight of fleece	7.29 lbs.
Average yearly value of fleece	82 cents.
Average weight of wool per 1,000 pounds live weight	48 26 lbs.
Average value of wool per 1,000 pounds live weight	$5 45
Value of wool per pound in natural condition	11 cents.
Average shrinkage in scouring	54¼%
Value of wool per pound in scoured condition	24 cents.

THREE REPRESENTATIVE LINCOLNS.

No. 43.—Bred by Gibson & Walker, Denfield, Ont.
No. 50.—Bred by T. E. Robson, Ilderton, Ont.
No. 41.—Bred by Gibson & Walker, Denfield, Ont.

Record of Breed.

Average age of the ten lambs	345 days.
Average weight March 31 (shorn)	158 lbs.
Average gain per day during the experiment	0.55 lbs.
Average dry matter per pound gain	7.29 lbs.
Average cost of feed per pound gain	2.89 cents.
Selling price on Chicago market	$4 50
Average per cent. of dressed mutton	55.7%
Average weight of fleece	12.85 lbs.
Average age of fleece	332 days.
Average value of fleece	$1.79
Average yearly weight of fleece	14.13 lbs.
Average yearly value of fleece	$1 96
Average weight of wool per 1,000 pounds live weight	81.48 lbs.
Average value of wool per 1,000 pounds live weight	$11.37
Value of wool per pound in natural condition	13¾ cents.
Average shrinkage in scouring	40%
Value of wool per pound in scoured condition	23 cents.

THREE REPRESENTATIVE LEICESTERS.

No. 61.—Bred by E. Gaunt & Sons, St. Helens, Ont.
No. 69.—Bred by Peter Thompson, Salem, Ont.
No. 70.—Bred by Watt Bros., Salem, Ont.

Record of Breed.

Average age of the ten lambs	362 days.
Average weight March 31 (shorn)	165 lbs.
Average gain per day during the experiment	0.52 lbs.
Average dry matter per pound of gain	7.49 lbs.
Average cost of feed per pound of gain	2.93 cents.
Selling price on Chicago market	$4 50
Average per cent of dressed mutton	57.8%
Average weight of fleece	11.55 lbs.
Average age of fleece	348 days.
Average value of fleece	$1.76
Average yearly weight of fleece	12 11 lbs.
Average yearly value of fleece	$1.85
Average weight of wool per 1,000 pounds live weight	70 lbs.
Average value of wool per 1,000 pounds live weight	$10 52
Value of wool per pound in natural condition	$14\frac{3}{4}$ cents.
Average shrinkage in scouring	$38\frac{1}{2}\%$
Value of wool per pound in scoured condition	24 cents.

THREE REPRESENTATIVE COTSWOLDS.

No. 52.—Bred by D. McCrae, Guelph, Ont.
No. 56.—Bred by Robert Miller, Brougham, Ont.
No. 57.—Bred by Robert Miller, Brougham, Ont.

Record of Breed.

Average age of the ten lambs	347 days.
Average weight March 31 (shorn)	161 lbs.
Average gain per day during the experiment	0 62 lbs.
Average dry matter per pound gain	6.53 lbs.
Average cost of feed per pound gain	2 60 cents.
Selling price on Chicago market	$4 50
Average per cent. of dressed mutton	54 9%
Average weight of fleece	12 65 lbs.
Average age of fleece	334 days.
Average value of fleece	$1 66
Average yearly weight of fleece	13.82 lbs.
Average yearly value of fleece	$1 81
Average weight of wool per 1,000 pounds live weight	78.42 lbs.
Average value of wool per 1,000 pounds live weight	$10.26
Value of wool per pound in natural condition	13 cents.
Average shrinkage in scouring	43⅓%
Value of wool per pound in scoured condition	23 cents.

THREE REPRESENTATIVE DORSETS.

No. 73.—Bred by John A. McGillivray, Uxbridge, Ont.
No. 71.—Bred by R. H. Harding, Thorndale, Ont.
No. 78.—Bred by John A. McGillivray, Uxbridge, Ont.

Record of Breed.

Average age of the ten lambs	
Average weight March 31 (shorn)	138 lbs.
Average gain per day during the experiment	0.48 lbs.
Average dry matter per pound gain	7.85 lbs.
Average cost of feed per pound gain	3 05 cents.
Selling price on Chicago market	$3.75
Average per cent. of dressed mutton	52.6%
Average weight of fleece	6.83 lbs.
Average value of fleece	77 cents.
Average weight of wool per 1,000 pounds live weight	19 56 lbs.
Average value of wool per 1,000 pounds live weight	$5.57
Value of wool per pound in natural condition	10¾ cents.
Average shrinkage in scouring	55%
Value of wool per pound in scoured condition	24 cents.

THREE REPRESENTATIVE MERINOS.

No 90.—Bred by Joseph Edgerton, Nassau, Iowa.
No. 81.—Bred by Joseph Edgerton, Nassau, Iowa.
No. 89.—Bred by Joseph Edgerton, Nassau, Iowa.

Record of Breed.

Average age of the ten lambs	362 days.
Average weight March 31 (shorn)	99 lbs.
Average gain per day during the experiment	0 29 lbs.
Average dry matter per pound gain	9 35 lbs.
Average cost of feed per pound gain	3.78 cents.
Selling price on Chicago market	$4·25
Average per cent. of dressed mutton	51.8%
Average weight of fleece	9 9 lbs.
Average age of fleece	359 days.
Average value of fleece	$1 00
Average yearly weight of fleece	10.07 lbs.
Average yearly value of fleece	$1 02
Average weight of wool per 1,000 pounds live weight	100.43 lbs.
Average value of wool per 1,000 pounds live weight	$10.16
Value of wool per pound in natural condition	$9\frac{3}{4}$ cents.
Average shrinkage in scouring	$67\frac{1}{2}$%
Value of wool per pound in scoured condition	30 cents.

THREE REPRESENTATIVE CROSS-BREDS.

No. 96.—Bred by Wm. Worthington, Thornburg, Iowa.
No. 100.—Bred by Wm. Worthington, Thornburg, Iowa.
No. 94.—Bred by Wm. Worthington, Thornburg, Iowa.

Record of Breed.

Average age of the ten lambs	346 days.
Average weight March 31 (shorn)	111 lbs.
Average gain per day during the experiment	0.41 lbs.
Average dry matter per pound gain	7.02 lbs.
Average cost of feed per pound gain	2.82 cents.
Selling price on Chicago market	$4.50
Average per cent. of dressed mutton	53.7%
Average weight of fleece	7.5 lbs.
Average age of fleece	334 days.
Average value of fleece	90 cents.
Average yearly weight of fleece	8.2 lbs.
Average yearly value of fleece	93 cents.
Average weight of wool per 1,000 pounds live weight	67.87 lbs.
Average value of wool per 1,000 pounds live weight	$8.15
Value of wool per pound in natural condition	$11\frac{3}{4}$ cents.
Average shrinkage in scouring	53%
Value of wool per pound in scoured condition	25 cents.

THREE REPRESENTATIVE RANGE LAMBS.

From Wyoming, bought through Clay Robinson & Co.; breeder unknown.

Record of Breed.

Average age of the ten lambs	331 days.
Average weight March 31 (shorn)	99 lbs.
Average gain per day during the experiment	0 37 lbs.
Average dry matter per pound gain	6.84
Average cost of feed per pound gain	2.71 cents.
Selling price on Chicago market	$4.50
Average per cent. of dressed mutton	55.6%
Average weight of fleece	5.13 lbs.
Average age of fleece	321 days.
Average value of fleece	67 cents.
Average yearly weight of fleece	5.83 lbs.
Average yearly value of fleece	76 cents.
Average weight of wool per 1,000 pounds live weight	51.82 lbs.
Average value of wool per 1,000 pounds live weight	$6.80
Value of wool per pound in natural condition	12½ cents.
Average shrinkage in scouring	48%
Value of wool per pound in scoured condition	24 cents.

Record of Shropshire Yearlings.

Average weight March 31 (shorn)	187 lbs.
Average gain per day during the experiment	0 33 lbs.
Average dry matter per pound gain	11 lbs.
Average cost of feed per pound of gain	4.44 cents.
Selling price on Chicago market	$4 25
Average per cent. of dressed mutton	62 3%
Average weight of fleece	10 5 lbs.
Average age of fleece	313 days.
Average value of fleece	$1.34
Average yearly weight of fleece	12 24 lbs.
Average yearly value of fleece	$1.56
Average weight of wool per 1,000 pounds live weight	56.03 lbs.
Average value of wool per 1,000 pounds live weight	$7.17
Value of wool per pound in natural condition	12¼ cents.
Average shrinkage in scouring	49%
Value of wool per pound in scoured condition	24 cents.

SOILING CROPS ON THE FARM.

By C. M. Macfie, Appin, Ont.

As Canadians we are beginning take a just pride in our ability as agriculturists, and we, in this banner Province of Ontario, are indeed ahead of our sister provinces in the race for recognition as first-class agriculturists. Surrounded as we are by the influences which should make us better farmers, aided by the help of beneficent governments to advance agriculture, stimulated by the success and warned by the failure of the past, we are not yet perfect in the details of farm management. We often do many things we should not do and omit to do those things which would be of immense benefit in improving our condition financially. But perhaps one of the greatest omissions of to-day, is the little attention we give to the production of green crops to supplement our pastures at those seasons of the year when they are burned by the oft recurring drouths to which we are subject. We know that we cannot pasture as many head of cattle as we otherwise could if we could depend on our pastures at all times. We know, too, that our profits as stockmen or dairymen are greatest when our cattle have an abundance of nutritious food. We also have noticed that those cattle which have an abundance of food during the whole year are the ones which produce a profit for their owners, while those that must store up enough flesh and bodily energy while the pasture is luxuriant to assist the poorer food of the remainder of the year to maintain the animal body, are mere bills of expense to their owners. It is useless for any farmer to buy pedigreed and high-classed animals if he does not at the same time feed liberally; and the time when we are most apt to neglect our animals is not when the winter comes, but rather when those severe drouths of summer destroy our pastures and we are perhaps (seemingly) too busily engaged to give them the attention they deserve; or if we are willing to give them that attention, we have neglected to exercise sufficient foresight in providing for them the food they so much require. This neglect cost the Ontario farmer last year in the single item of cheese the sum of about $600,000, to say nothing of the loss along other lines.

When we look at the question of stock-raising and dairying in the light of these facts, we see that if the Ontario farmer is to hold his own against the world and reclaim at least his share of what is being lost by negligence, if he is to reduce the cost of production of his articles and hence make the profits he should make, it is incumbent on him that he adopt at least a partial system of soiling; and that if the crops which he thus provides are fortunately not required, it will be an easy matter to store

them as winter fodder. There are many fodder crops grown at the present time, but we will give attention to only such as will be necessary to ensure a supply of each, when necessary. Among these the first in season, and one in quite general use in our Province is winter rye. As this crop is fit for green feed just at the time when our pasture is at its best, its use has not become general ; but at the same time, in case of emergency, it would prove itself a valuable crop. Recent analyses have shown, that if it is cut when the head is about forming, it possesses not only a larger proportion than was formerly supposed of material in such condition as to be valuable to the animal for milk production, but also a relative proportionment of such constituents as will necessitate the addition of but small quantities of concentrated food to form a balanced ration.

Following winter rye in the provision of this supply of summer food will be the clovers. Of the common varieties little need be said, but we wish to say a word about lucerne. It is the earliest of the clovers, and promises to take an important place among our fodder-supplying plants, especially in those parts of the Province where the severity of the winter does not interfere. Much has been said against this plant, some of our best agriculturists having condemned it, but no matter how severe the drouth, lucerne, when once rooted, keeps its greenness and continues to grow, and any plant which will do this in the severity of our drouths is worthy of trial at least. Moreover, any plant that will produce at least three, and sometimes four, cuttings in a season should have a place. It flourishes best on a soil of sandy or gravelly nature, with an open or well-drained subsoil, and one possessing a quantity of lime. It is sown in the same manner as red clover, and does best with barley as its nurse-crop. The young plants are very tender, and unless there is an exceptional growth during the first year they should not be touched. It is the deepest-rooted plant cultivated, and, like red clover, is valuable for enriching the land. Following the first cutting of lucerne, we may feed red clover and alsike mammoth clovers, but these need no comment.

Another good crop in providing our supply is a combination of pease and oats, sown in the proportion of one bushel of pease to one and one-half bushels of oats to the acre. This provides a food of excellent quality. An early and stiff-strawed variety of oats should be chosen to mix with the pease, and the crop for fodder should be used when the milk stage is reached. If this combination is used (and it should be), it will be well to sow in patches sufficiently large to feed our stock for a week, at intervals of a week or ten days, and for three or four times, and thus give a succession of food. If too much is sown it can be cured for winter fodder or ripened and threshed. When these two grains are sown together in this manner a larger quantity of food on the same area is produced than if half the area were sown with pease and half with oats, because of the fact that the pea, like the clover plant, is a nitrogen gatherer, and the oats feed heavily on the supply of nitrogen stored up by the pease.

Another crop which was grown more largely last year on account of the drouth, and which is of much value as a soiling crop, is millet. There is one point I wish to refer to in connection with millet, and that is the tendency among most of us to leave millet until too late a stage in its growth before cutting. It should be cut just before the blossoming stage. If cut later the seeds have absorbed largely of the substance of the stalk, and the fibre has hardened and become less easily digestible. When cut at the early stage we get nearly as much, and a more digestible food, the after changes consisting largely of a transference of the substance from the stalk to the seed.

Next in order is the corn crop, by far the most important of all the crops used for fodder. So much has been said on this one crop that anything from me might seem superfluous. There is one practice, however, which is by far too common among our farmers, and that is the broadcasting of the corn we use for soiling. We can never get in the corn those constituents it should contain by growing in this manner. More food can be grown on one acre by planting in hills or drills three feet eight inches apart than by sowing with every hoe of the drill. This method has been spoken of as an expensive method of watering cattle. Let us remember that corn is a plant that does not derive all its food elements from the soil. It is estimated that sixty per cent. and over

of the plant food in corn comes from the air. All the starch and sugar in corn (and corn is a carbonaceous food) comes from the air, and unless the air has free access to all the plants (which it cannot have in broadcast corn) we cannot expect as much nutriment in the food. Analyses go to show also that we lose from 50 to 100 per cent. of our crop by this method. Then there is another point, and one which has led a great many to condemn corn as a soiling crop, viz, the time at which many begin to use their crop as green fodder. It has been ascertained by many analyses at different stages in the growth of the corn, that its food value is at its best when it reaches the glazed stage. How many of us who, in the dry seasons, have nothing else except corn to feed our stock, begin to feed when the corn is just tasselling? The food value of corn at that stage is scarcely one-third of the food value at the glazing stage, hence it will take three times the quantity to supply a cow with the nutriments she will require if fed at the tasselling stage than if fed at the glazing stage. To illustrate further: If fourteen represent the corn at tasselling, forty-two will represent it at the glazing stage. If a cow eat forty-two pounds of solids she must have three times forty-two pounds of corn at the tasselling stage, and this she cannot carry, hence the reason that cattle are always hungry after fed on too green corn. But the corn crop would prove of greatest value as a soiling crop if fed from the silo. Let a greater quantity than will last over winter be stored up (if we have room), and when the drouth of summer comes there will be an excellent food for our cattle. There will also be the advantage of feeding in the stable, away from the troublesome horn-fly. Mr. E. D. Tillson, of Tilsonburg, adopted this method two years ago, and he wrote as follows regarding it: "I have been feeding my forty cows on ensilage all summer. During the months of July and August our pastures were completely burned up, but with my old last year's ensilage I managed to keep my cows in good condition with but little falling off in milk, and that was caused more by the horn-fly than by lack of feed."

There is another crop following corn which makes an excellent pasture, for sheep and lambs especially, viz., rape. It is seldom used for milch cows as it is liable to give an odor to the milk, but for steers and young cattle it proves an excellent soiling crop. I take this extract from a bulletin issued by the United States Department of Agriculture on the subject: "As a soiling crop it gives tone to the system, puts on flesh rapidly, and precludes the necessity for a heavy grain ration. The amount to be fed is so completely under the control of the feeder that all danger from excessive feeding is completely obviated. Swine are very fond of it, and rape will prove of much service to their other concentrated foods when confined to their pens. They have been known to leave grain in some instances to feed upon rape when it has been placed before them. It will keep for a long time in early winter in heaps like cocks of hay, and may be drawn and fed as desired."

Let us see to it, then, that the future of the stock and dairy interests of our country fail not because of our negligence to do what we can to keep up the excellence we have already attained. This can be done by the skilful feeding which has characterized the Canadian farmer in the past.

AGRICULTURAL EXPERIMENT STATIONS, WITH SPECIAL REFERENCE TO CATTLE FEEDING.

By C. A. Zavitz, B.S.A., Experimentalist, O.A.C., Guelph.

It is somewhat surprising when we realize the fact that it is not quite fifty years since the organization of the first Agricultural Experiment Station. Scientific investigations in agriculture were made by a few individuals, such as Lawes and Gilbert in Eng and, Liebig in Germany, and Boussingault in France, whose work dates back a little beyond the last half century. It was not, however, until the year 1851, that a little company of farmers banded themselves together in the Village of Moeckern, Germany,

and there formed the first association for agricultural experimental work. Little could they have imagined at that time that their example would influence the agriculture of the whole world within a century's time. We notice, however, that in 1856 there were fifteen, and to-day there are upwards of one hundred experiment stations in the different countries of Europe. The movement has gone on extending and has reached into Asia, Australia and America.

The first experiment station in America was established at Middletown, Connecticut, in connection with Wesleyan University, in 1875. One year after this date experimental work was started in connection with the Ontario Agricultural College, at Guelph. The example of these experiment stations was speedily followed elsewhere, as we find that in 1888 there were twenty institutions of this kind established throughout the North American continent, and there are at the present day no less than six experiment stations or experimental farms in Canada, and fifty-four in the United States. These sixty institutions receive annually upwards of one million dollars for the purpose of agricultural experimentation and investigation. The stations alone employ about six hundred persons in the work of administration and enquiry.

What the Stations are Doing.

There are, in fact, but few subjects with which the practical farmer has to deal that are not receiving the attention of one or more of the experiment stations now established on this continent. Numerous experiments are being conducted in the saving and use of manures, the tillage of the soil, the selection and preservation of seeds, the cultivation and improvement of the crops, the feeding and care of the stock, the management of the dairy, the destruction of troublesome weeds and fungi, the preservation from the ravages of insects, and also in other lines of important agricultural work.

From the publications sent out by the office of Experiment Stations, Washington, D.C., we learn that, in the United States, all the stations are studying the more important crops in some form or other. Thirty-five stations are investigating the composition of feeding stuffs, and some stations are making digestion experiments. Thirty-seven stations are conducting food experiments, for milk, beef, mutton or pork, or are studying different methods of feeding. Thirty-two stations are investigating subjects relating to the dairy. Forty-five stations are studying methods of analysis, especially from a scientific standpoint. Thirty-nine stations are making analyses of commercial or home-made fertilizers, or are conducting field experiments with fertilizers. Fifteen or more stations, either exercise the fertilizer control in their respective stations or are making analyses on which the control is based. Forty stations are at work upon the soil, investigating its geology, physics or chemistry, or conducting soil tests with fertilizers, or in other ways. No less than thirty stations are studying problems relating to meteorology and climatic conditions. Forty-three stations work to a greater or less extent in horticulture, and botanical studies occupy more or less of the attention of about thirty stations. Thirty-one stations are investigating injurious insects with a view to their restriction or destruction. Quite a number of the stations have begun operations in forestry. Sixteen stations study and treat many of the most common diseases of domestic animals. At least seven stations are engaged in bee culture, and three in experiments with poultry.

In Canada there are five agricultural experiment stations under the control of the Dominion Government, and one under the control of the Government of the Province of Ontario. The average experiment station of the United States is maintained at an annual expenditure of about nineteen thousand dollars, and the average experimental farm in Canada under the control of the Dominion Government at an expenditure of fifteen thousand dollars. The experimental work in connection with the Agricultural College in Ontario is carried on at a cost of about ten thousand dollars per annum.

At the Canadian experiment stations scientific research is being conducted in the laboratories, and there is a large amount of practical experimenting carried on in the field, in the stable and in the dairy. The institutions act as bureaus of information on many

questions of practical interest to the farmers, they aim by practical experimental work to devise better methods of agriculture, they introduce and experiment with new varieties of crops, they try to ascertain the best systems of feeding and managing live stock, they give information upon the best methods of destroying the most troublesome insects and diseases of farm crops, they help to defend the farmers against fraud in the sale of seeds of various kinds, and they endeavor to discover the underlying principles of farming in order that these principles can be better used in the advancement of agriculture.

As the Governments of Canada and the United States place such a high estimate upon the importance of scientific investigation, and of systematic experimentation in connection with agriculture, as to devote upwards of one million dollars to this work annually, should it not be the aim of every farmer to watch closely the results which are being obtained from these various institutions from year to year. Although the total sum devoted to this work seems large, it is interesting to know that the entire work is carried on at a cost of only one dollar for each three thousand three hundred dollars of our agricultural product, and yet many of the results already obtained are of considerable practical value. In the tests of new varieties of grains, roots, potatoes, forage plants and fruits, in feeding experiments with different kinds of farm animals, in investigations in dairying, especialiy regarding means for testing milk, in methods of destroying injurious weeds, etc., many practical results have been reached.

The Ontario Agricultural Experiment Station.

As the Ontario Agricultural College was one of the first institutions on the American continent to engage in practical experimental work in agriculture, it will be clearly understood that the work of the first few years would be very limited in its scope and somewhat deficient in systematic arrangement. It was, in fact, an experiment in itself, and had to be conducted without much experience in the new field of investigation. In reviewing the records of the first few years of the institution, we find that there are not many results of experimental work that are of general value to the community, but, as experience was gleaned, and larger grants of money were devoted to the work, the results obtained from year to year have become of increasing value, and the institution is now considered to be one of the best on the American continent, in the line of practical experimental work. The various departments are becoming well equipped and good work should be expected along the various lines of agricultural experimentation and investigation. The results of experiments conducted in the field and in the dairy have already been recognized by leading agriculturists throughout America as being of much practical value. The Professor of Agriculture at the oldest Agricultural College in America, while going through our experimental grounds in the summer of 1895, made the statement that he had visited twenty-two of the American experiment stations and that he had no hesitation in saying that the Experimental Department of the Ontario Agricultural College was ahead of anything that he had seen up to the present time. The experimental work is not confined to the field, the stable and the dairy, but experiments are also being carried on in connection with the horticultural, the apicultural and the poultry departments, and scientific investigations are being conducted in chemistry, in botany and in bacteriology.

Live Stock Experiments.

Practical experiments in live stock require great care and accuracy in order to have the results reliable and useful. Some of the difficulties in connection with experiments of this nature may be stated as follows: 1. The process of digestion is concealed; 2. The animal frame is very changeable; 3. The effect of life upon material substances is hard to explain; 4. The physical and the chemical characteristics lack complete uniformity; 5. The experimenters in the past have been few. Notwithstanding these difficulties, however, we believe that much valuable work of an experimental nature can be done in such a way that valuable results can be obtained for the benefit of the stock raiser.

In order to obtain these results, live stock experiments should not only be conducted with great care and watchfulness, but they should, in most cases, be repeated several times.

In the work of stock-feeding, more definite knowledge is required as to reasons why this or that food, or method of feeding, is best suited for a certain purpose. To obtain this information is the desire of every intelligent and thinking farmer, and to this end men of science and men of practice are uniting their forces, and year after year new light is being discovered in the hitherto dark regions of agricultural science. The most extensive and thorough experimenting in the feeding of animals has been done within the last thirty years in the European and especially in the German agricultural experiment stations. They have spared neither trouble nor expense in following out investigations which have shed a flood of light upon many problems of intense interest to the farmer. The most successful stock raisers are those who study most carefully their land, their crops, their animals, and their labor, and who apply with the greatest skill and intelligence the results of experiments conducted by themselves and by others. A considerable number of experiments have been conducted at the Ontario Agricultural College, in the feeding and the handling of cattle, sheep and pigs. But never in the history of our College has there been such a complete equipment for live-stock experiments as there is at the present time. This work comes under the direct supervision of our Agriculturist, and we believe good work will be done in this department.

We will review, very briefly, some of the experiments which have been conducted in the feeding, and the handling of cattle at this Institution. For the results of the different experiments conducted with sheep and pigs, the reader is referred to the various reports and bulletins which have been published from time to time.

Cattle Experiments at The Ontario Agricultural College.

Cattle experiments have been conducted at the College, to a greater or less extent for the past twenty years, and many of the results are quite interesting, and are of considerable value. It has been found to be a difficult matter to summarize the results of some of the experiments conducted; and, should the reader desire to make a very careful study of each individual experiment, he is referred to the various publications of the College. Although it is unsafe to draw many definite conclusions from live stock experiments, still there are numerous valuable observations which can be made with profit from the experiments which have already been conducted at the Institution. Some of these observations are here specified, with a hope that they will be of value to the farmers of Ontario, and as a basis to even more extensive experimental work with cattle in the future.

1. The cost of making beef from animals which were fed whole milk when young was much greater than from those which were fed skim milk.

2. A young cattle beast fed on a skim milk ration with adjuncts may be made to weigh almost as much when one year old, as one of similar breeding fed on a whole milk ration with adjuncts of a similar character.

3. In feeding calves, a good substitute for whole milk is a ration composed of skim milk and linseed meal.

4. Young cattle should be fed bulky food which is easily digested.

5. In rearing steers for the production of beef, the quality of the animals has much to do with the financial results.

6. Good grade steers have made an average daily gain of 2.3 pounds during their first year of age, when the weight at birth was included.

7. We should be slow to draw conclusions regarding the relative value of the different improved breeds of cattle for making beef, as the food, individuality, etc., of the animals exert so marked an influence.

8. Some animals are more capable of producing beef of high quality than others.

9. The superiority of beef breeds of animals appears to be largely due to their tendency to mature early, and to produce beef of high quality.

10. Animals without improved blood are not capable of making gains so rapidly as those of good breeding, although fed with the same liberality.

11. It seems to be unprofitable to raise beef from scrub stock, even when the conditions are all favorable.

12. When young steers are fed on a forcing ration during the first year of their lives, the results of the second year's feeding is not likely to be satisfactory, either in the general well doing of the animals or from a financial standpoint.

13. A steady frosty winter has given more satisfactory results, than an open one, in feeding cattle.

14. One pound increase in live weight on a thousand pound steer can be obtained from the use of various materials that contain eleven pounds of dry substances, chemically.

15. An average two year old steer will eat its own weight of different materials in about two weeks.

16. The temperature of the stable, as well as the degree of succulency of the food, has a marked influence upon the amount of water which an animal will drink.

17. As a general thing, the daily increase in the live weight of cattle decreases as the age of the animal increases.

18. It has been found to be about 30 per cent. more profitable to fatten and dispose of steers two years old, than to keep them up to three years of age.

19. Experiments conducted throughout several winters with two year old steers show an average daily gain of a little over 1.7 pounds in live weight when the animals were fed during periods of five or six months.

20. In 1883, a steer was fattened at our Experimental Farm which gave a live weight of 2,110 pounds when two years and seven months of age; and when killed produced seventy-two pounds of meat to every one hundred pounds live weight.

21. In this country the market value of store cattle can usually be increased 36 per cent. by good feeding during the six months of finishing.

22 There is usually less money made in raising store steers than in fattening them, and it is more exhaustive to the fertility of the soil.

23. The weights of animals vary considerably from day to day, and when comparative weighings are desired at different periods, whether on a private farm or at an Experiment Station, the weighings should always be made at the same hour of the day, and at exactly the same length of time after the animals have received food, water, and exercise.

24. Steers, twelve hundred pounds and upwards, shrink in the neighborhood of forty pounds when fasting twelve hours in the stall during the finishing period; it is, however, considerably greater if the animals are allowed their liberty in a yard while being fasted, and, when thus fasted, the shrinkage will be less if the animals have been in the habit of occasional exercise.

25. Stall-fed animals, though allowed daily exercise in a barnyard, will lose weight for a time when turned out on a grass pasture.

26. Stall-fed animals though allowed daily exercise in a barnyard will lose weight when travelling by rail, even for a short distance.

27. In feeding eight kinds of green fodder crops separately to cattle in the summer of 1893, it was found that rape, crimson clover, grass, peas and vetches, were eaten rapidly and that Egyptian peas and horse beans did not seem to be highly relished by the animals.

28. It has been found an excellent plan to draw corn or rape to the field when the pastures are giving out in the dry summer weeks.

29. Pastures can frequently be supplemented to great advantage by the feeding of corn silage during the months of July and August.

30. Cattle appear to like a pasture composed of a mixture of eight or ten varieties of grasses and clovers, better than one composed of timothy and red clover.

31. In feeding cattle upon a pasture composed of mixed grasses which had been sown for several years, it was found that meadow fescue and lucerne formed the principal amount of food during the dry weather, in the latter part of the summer.

32. Good corn silage is highly relished by cattle.

33. We consider corn silage one of the most convenient and most economical foods for fattening steers.

34. From the behavior of the animals fed on corn silage and meal we do not consider this ration a perfectly safe one for finishing live stock in beef making.

35. For fattening cattle, a ration composed of one part of straw or chaff and three parts of corn silage by weight, with a moderate allowance of meal, seems well adapted to maintain uniformity and good health in the animals fed upon it.

36. It seems unnecessary to feed a large amount of grain to fattening animals, when silage made from sufficiently matured corn form a leading factor of the ration.

37. Fifteen years ago there was one silo at the College with a capacity of about forty tons, and during the last few years we have had two silos which hold four hundred and fifty tons, or the corn produced on about thirty acres of land annually.

38. Twenty years ago there were fully three times as many acres devoted to roots as to corn on the Experimental Farm; but to-day we have upwards of three times as many acres devoted to corn as to roots.

39. In feeding cut hay and pulp roots to cattle it was found that that there was an average daily gain per head of 1·3 of a pound of live weight more than by feeding the same material unprepared.

40. One of the surest preventitives from the ravages of a hornfly is to rub the cattle thoroughly once a week with a mixture of three table-spoonfuls of carbolic acid and one gallon of seal oil.

41. Constant confinement of a heifer in a large box stall, from the time of birth until eighteen months of age, appeared to materially interfere with the breeding properties of the animal, which, however, did not prove to be permanent after liberty was allowed for a few weeks.

42. An Experiment to determine the amount of manure made by a cattle beast during the successive periods of its growth, shows that the amount of manure, solid and liquid, produced by a steer was 5.5 tons the first year, 8.7 tons the second year, and 9 0 tons the third year.

43. By reckoning the value of manure on the same basis that commercial fertilizers are valued, the manure produced in three years by a steer amounted to $109.01; thus showing the great loss which undoubtedly occurs on many farms throughout Ontario by allowing the most valuable portion of the cattle manure to become wasted.

TUBERCULOSIS.

By David McCrae, Guelph.

This disease, so common among cattle and other animals, is identical with "consumption" in the human family. Anything that will throw new light on this disease is of special interest to the stock breeder, the feeder, the dairyman, and also to every former who has anything to do with stock. The general public, who are users of milk and beef, have also an interest in knowing the latest scientific knowledge on this subject

A French scientist, of well-known reputation, Prof. Ed. Nocard, recently published the result of many years' study in a work entitled "The Animal Tuberculoses and their Relation to Human Tuberculoses." This has been translated by Dr. H. Scurfield, and is the latest scientific work on the subject of Tuberculosis. It has been freely used in compiling the following account of the disease:

Origin and extent Tuberculosis is no new disease; when it began its ravages no one knows. It was known to the ancients, and its various manifestations among cattle were described many centuries ago. Laws were passed regarding it in Italy and Spain four hundred years ago. It is prevalent in all civilized countries, though in some it is claimed that it is not so common as in others. Those claiming partial exemption are the northern parts of Norway and Sweden, Iceland, Algeirs, and the steppes of Eastern Europe. There is no disease which attacks so many different kinds of animals. Not one of our domestic animals is proof against it; some are more susceptible than others. Kittens are easily infected, and it is rather common among cats. Dogs are freer, but there are a number of well authenticated cases, some of which appear to have contracted the disease from their master. It is frequent among pigs, and rarer among sheep and goats. It is not common among horses, but if a horse contracts the disease it runs a rapid course and soon becomes generalized and fatal. The rabbit and the guinea pig do not readily take the disease, but are very susceptible to inoculation, and are largely used for experimental purposes. It has been found in the camel, both in Egypt and the steppes of Asia. We have authentic records of tuberculosis in the lion, the tiger, the panther, the fox, the tapir, etc. Giraffes, antelopes, llamas, gazelles, etc, in zoological gardens are decimated by it, and it is the one disease that kills nearly all the monkeys brought to Europe. Among the birds of the poultry yard the disease is very common, and often assumes an epidemic character.

Cause in Cattle. Tuberculosis is a parasitic disease which is both inoculable and infectious. Dr. Villemin, in 1865, demonstrated its contagiousness. Dr. Robert Koch has the honor of having isolated its microbe, to which has been given the name of "the bacillus of Koch." This tiny organism which is only one ten-thousandth of an inch long, and one fifty-thousandth of an inch wide, is a slender rod-like body, which can only be seen under a microscope of high power. The spread of the disease has but one cause,—the penetration into the body and the propagation there of this tiny microbe. When the bacillus becomes lodged in any organ or tissue, it begins to multiply, causes an irritation which leads to the formation of a tubercle, whence the general name of the disease, "tuberculosis." The tubercle, when it has reached its full growth, is a little nodule about the size of a millet seed When these tubercles form in large numbers they run together forming masses of various sizes. The disease is a development of these tubercles in one or more organs of the body. The bacillus may be carried into a healthy body and may not find a lodgement—may be thrown off again. Of course to infect a healthy herd the necessary condition is the introduction of a tuberculuos animal. Is that condition enough? Professor Nocard answers, no. The contagion of tuberculosis is of a particular kind, and transmission only takes place as the result of an intimate and prolonged living together. Just how the disease spreads among cattle is not known. Just when a diseased animal becomes dangerous to others has not been clearly shown. The sojourn in a common pasture may be looked upon as practically free from danger. There seems to be little risk of infection at a distance through the air, even at a short distance. Cows in one end of the stable were all found healthy, while in the other end connected by an open door, they were nearly all tuberculous. One range in a stable has been found infected while the other range remained healthy. Ill ventilated, badly cleaned stables where animals are all kept tied for a long time, seem to favor the spread of the disease. A stable may become infected and be dangerous to animals brought into it. The power which tuberculosis possesses of spreading is not clearly known.

Symptoms. Tuberculosis in cattle is a disease whose progress is usually very slow. Its presence is often compatible with all the appearance of health, and it may exist for months and years without causing one to suspect its existence; while in man, where it

more commonly attacks the lungs, doctors recognize its commencement, but it is not the same with cattle. In them it may escape the most careful examination even at an advanced period of its existence. It may attack any of the organs of the body. About twenty per cent. of cattle slaughtered with it, have it in their lungs; about the same number have it in the lymphatic glands, others in the liver, the intestines, the spleen, the bones, the joints, the udder, the skin, etc. Naturally the symptoms of the disease vary greatly according to the organ or organs attacked. If the lungs be attacked there is usually a cough at long intervals; the cough is a slight one, dry, a little whistling, and in short paroxysms. It may be noticed when the stable is opened in the morning, after drinking, or when the animal rises. If taken out and given a quick run it may cough. As the disease progresses coughing may become more frequent; while not throwing out the mucus the animal may be noticed swallowing it. The skin looses its kindly feel and the hair becomes dull and dry. The cow stands with her elbows out, and there is sometimes a peculiar tendency to shrink if pressure is put over the kidneys. All these signs are vague enough, but careful watching make them valuable to breeders. Finally, the disease may not be confined to one part, several may be attacked. When the tuberculosis becomes general the development of the disease is extremely rapid. This in man is called "galloping consumption," and is usually fatal in a few weeks. In this type the disease is spread throughout the whole body by the blood and assumes the character of a general disease.

Heredity. By the general public consumption has been looked upon as the type of hereditary diseases. If the parents had it the children would have it, and reference would be made to whole families whose members one after another died from tuberculosis. This is true not because of the transmission from parent to child, but by the infection to which the child was exposed in contact with diseased parents, and living in an infected dwelling exposed to the contagion of the disease. This has been learned by watching the disease among cattle. All the inspectors at public slaughter houses agree that a case of tuberculosis of the calf is very rare. At Munich, in Germany, an average of 160,000 calves are killed for veal every year, and all are carefully inspected. Out of this number there were found tuberculous five in five years or one per 160,000. At Lyons, France, five were found out of 400,000; at Berlin, Germany, four out of 150,000 All these are sections where the number of diseased cows is high. In Saxony, the most seriously affected country in Europe, and where about forty-four per cent. of the cows are diseased, there were found thirty-three calves out of 85,000, or about .04 per cent. It must also be remembered that none of these calves were killed under three weeks, and most of them were from six weeks to two months old. They would be kept that time exposed to the contagion of the older animals. Professor Bang, of Denmark, has been successful in clearing a herd from tuberculosis by careful testing and isolating the healthy animals, and putting with them the calves from all the herd. In May, 1892, the entire herd of two hundred and eight animals was tested with tuberculin. Although the animals seemed healthy and there had been no special infection suspected, 80 per cent. of the cows and 40 per cent. of the bulls, heifers and calves re-acted. The two lots were kept apart, put out to grass and the byre thoroughly disinfected. A wooden partition covered on one side with felt was put through the building, keeping them apart, and the attendants were also separated and not allowed to go from one to the other. In May, 1892, there were one hundred and thirty-eight diseased, and seventy healthy animals. Those diseased were as soon as convenient fatted for the butcher, and when slaughtered the carcases were inspected and passed when found fit for food which was generally the case. The calves from the diseased breeding cows were at once removed to the healthy lot. In October, 1892, the seventy were again examined, and seven removed, leaving sixty-three. In May, 1893, the calves had brought up the number to one hundred and three; of these ten re-acted and were removed. October, 1893, found one hundred and seven, and only one re-acted. In May, 1894, there were one hundred and twenty-two, of which two re acted. In October, 1894, there were one hundred and nineteen, of which one was suspicious and removed. In May, 1895, there were one hundred and thirty-six healthy animals none of which re-acted, there were at this time sixty-nine suspected

animals. Two years more and at the same rate the whole of the suspected animals will have been fed off, and that without any serious loss. Most of the calves were from the tuberculous cows, but none of them have shown any disease except one, which tested at the age of six and-a-half weeks re-acted and was removed. These results seem to show that a healthy herd may be bred from a tuberculous stock by careful isolation. The calves were always removed at once, were fed for the first few days on the mother's milk heated to 65° C., and afterwards on boiled milk. There are a few cases recorded in which it is clear that the calf had the disease at birth, but these are so very rare—not one in ten thousand—that the rule is clear that the disease is acquired and not hereditary.

Tuberculosis is not necessarily fatal. The microbe may be taken into the system and may not be able to obtain a lodgement; it is at once thrown off; or having obtained a place and begun to work it may be stopped, isolated and rendered harmless by the work of a healthy system. That this is often the case is shown by the large number of animals noticed in the slaughterhouses by the inspectors in which the disease has been stopped and healed.

Meat and Milk. Much harm has been done and alarm caused by some who have exaggerated the danger from using meat or milk of diseased animals for human food. Professor Nocard has carefully experimented for many years, has fed cats and kittens, pigs, dogs, calves, and other animals, large quantities of raw tuberculous meat, the very worst he could find of animals suffering from general tuberculosis, without producing the disease. Professor Perroncito, of Turin, fed eighteen young pigs on raw meat of condemned tuberculous animals for five months and could find no trace of the disease in any of them. In Germany the instructions issued regarding the careful inspection at slaughterhouses in that empire say, "In fact the very numerous experiments made at Berlin and a great number of German universities prove that, with the exception of the very rare cases in which tubercular nodules are found in the muscles, ingestion (eating) of meat from tubercular animals is powerless to transmit tuberculosis. The meat of tuberculous animals is to be declared not unwholesome if the animal being in good condition, the tubercular nodules exist in one organ alone, or in two or more organs which are in connection with each other, either directly or by means of blood vessels which do not belong to the general circulation." This important document is signed by the Minister of the Interior, the Minister of Agriculture, the Minister of Public Instruction and Hygiene, and the Minister of Commerce and Industries. There is therefore no danger from the use of raw meat from tuberculous animals when the disease has not become general; there is none whatever if the meat of any kind be thoroughly cooked. There is more danger from milk, as the milk of tuberculous cows is sometimes virulent. Professor Nocard sums up his facts and draws the following conclusions: First, that the milk of a tuberculous cow is only virulent when the udder is the seat of tuberculous lesions. Second, that ingestion (eating or drinking) of a virulent milk is only dangerous when the milk contains a great number of bacilli and is ingested in considerable quantity. Third, that practically the danger from the ingestion of raw milk only exists for persons who use it as their sole or principal food; that is to say, young children and invalids. Fourth, that to avoid all danger it is sufficient to bring the milk to a boil before it is consumed. It has been alleged that the boiling of milk renders it indigestible and causes it to lose much of its nutritive value. This is absolutely untrue. All doctors who have made a study of the question are now agreed that children digest boiled milk just as well if not better than raw milk. Moreover, the substitution of boiled milk for raw has not only the advantage of abolishing all danger from tuberculosis, but it also has a marked effect in diminishing the number of deaths and illnesses due to intestinal affections which are so common in hot weather.

Tubercle of the udder is rare. The disease betrays itself by a slightly hard swelling without heat or soreness. Usually only one quarter is attacked, and that a hind one. For a long time the milk remains normal, but gradually it changes, becoming bloody and yellowish, and the udder becomes almost wooden in its hardness. This milk used alone

as a chief part of food is dangerous. If it be normal and mixed with the milk of eight or ten other cows, it becomes comparatively harmless. Any milk taken in small quantities—one or two glasses at a time—seems to be overcome by the juices of the stomach and be quite incapable of spreading the disease. To the general public there is little if any danger from using ordinary milk. It is well to know that this is the opinion of the best scientific men of Europe, who have given the matter close and careful attention for many years. Even the slight danger should be guarded against, the udders of milking cows carefully watched, and on the slightest suspicious circumstances, the milk boiled, which always makes it perfectly safe.

WINTERING CATTLE AND FINISHING FOR THE BRITISH MARKET.

By George Murdie.

It is impossible for anyone to lay down a hard and fast rule and say that is the proper way for all to feed. Farmers are not all situated alike. My circumstances may be different from yours, and yours may be different from your neighbor's. A farmer may have some kind of fodder which he cannot dispose of very well, and although it may not be the best kind for cattle, yet, when mixed with something else it may do very well. One year one kind of grain may be very cheap and another dear, and *vice versa*. I may say that I scarcely ever use the same ration all through two winters in succession. My desire is to bring my cattle through the winter and have them in a certain condition when going on grass (that condition, in my opinion, ought to be as good as the majority of our butcher cattle), and do it as cheaply as possible. I have been feeding cattle in this way for twenty years, with a fair amount of success. Sometimes my profits have been good, sometimes not so good, but I have never yet lost on a bunch of cattle. Therefore, what I am going to say to you to-day will not be based on theory but on my own practical experience. I buy nearly all my cattle, and before I go out to buy I make up my mind what kind I want, steers or heifers, because you must have all of one kind ; it will not do to mix them. Then I make up my mind what weight I want them, nine hundred a thousand, or twelve hundred pounds; I try to get them as even as possible. It is a bad plan to go out to buy before you know what you want. I stick to my ideal as nearly as possible, and do not buy what I do not want because it is cheap ; and after using the greatest caution, I find after I get them home they are not all as good as I thought them when buying. I generally begin buying in the month of September, and try to get them in as good condition as possible, as I fancy that I can put on fat at that time, and later on, more cheaply than in winter. I generally buy Durham grades, but will take others if they are the right shape. When buying an animal I first look at it sideways ; I like them low-legged, long-bodied with brisket well out in front of forelegs, horns coming well down, with straight hind legs, clean in the neck, and fine in the muzzle. Then I go round in front of them and see that they are wide between the forelegs and good breadth between the shoulders. I then walk around behind them and see that they are a good breadth over the rump, holding the breadth well down, with hind legs well apart and broad over the loins. In short, if a plank were laid on their back it should rest on the body from the head to the tail touching the hook bones, or if on the side should touch the body all along. In color I like red, roan, white, or spotted red and white, but I do not like a black or brindle. I never put them into the stable unless I think that winter is coming on ; and in case of a fall of snow which is not likely to last, I draw out some hay or corn stalks to the woods where they have some shelter ; when once I stable them I keep them in for good. I formerly opposed dehorning, but I have changed my mind. Last year when shipping a load, one of them was ruptured in the yard before I got loaded, another broke her horn before being in the car five minutes, and by the time she got to Montreal she was all besmeared with blood and she besmeared all she came in contact with. The buyer said they would be worth from one to two dollars per head more if

they had been dehorned. I tie them up, some think they do better running loose, but I I cannot see it in that way. I never bought a bunch of cattle yet but some were behind others. Some will require more feed than others, some will eat faster than others, and if you give them enough so that those that eat slow will get enough, those that eat fast will get too much, and I believe it is better to give them a little too little than a little too much. I do not think you can get them so even when running loose as when tied up. I feed and water regularly. I think this a very important point; you will put on more fat by feeding and watering regularly than you will with the same feed if you are irregular. The secret of success is to put on the greatest amount of flesh with the least amount of feed. A farmer cannot expect to make money out of his farm unless he puts in his seed at the proper time, reaps at the proper time, and does everything else at the proper time. Neither can a farmer expect to make feeding cattle pay except he attends to his feeding at the proper time. Some farmers go to town in the morning, loiter around the hotels, or go visiting, or go to some idle gathering and stay away until nine or ten o'clock at night, while their cattle are without feed or water. I can assure that kind of feeding will never pay. Cattle become very restless when not fed at the usual time; if they are restless they will not thrive well. I let my cattle out from half an hour to an hour every day, but do not leave them out long enough to become chilled. I feed them the same from the time they go into the stable until they go out to grass. I like to keep them gaining all the time; I am never afraid of getting them too fat. I never saw a bunch of cattle yet that the buyers said were too fat. I believe when cattle are standing still or going back you are losing money just the same as you would be if you kept $500 that you did not need in the house instead of putting it in the bank. You may lose money by feeding cattle, but you will lose it by starving them. I like to have my cattle as fat when they are turned on the grass as are some of the cattle that are fed for the May market. I believe if half of our May cattle were put on grass for two months they would pay better than now. I give my cattle from two to two and a half acres of pasture each, but am careful not to turn them on when the grass is wet, for fear of bloating. There is not much fear if turned on when the grass is dry. In case of bloating, I give a tablespoonful of baking soda and the same of ginger in water, as a drench.

It is very important cattle should have water and salt at all times. Shade is also very important. I have a piece of woods that my herd can run in and I think they are benefitted by it. I like to have cattle ready for market about the 1st of July, or from that to the 12th, before the Manitoba cattle are shipped. For the last four years I have kept heifers, but I cannot say which pay the better, heifers or steers. Heifers will fatten more easily but will not grow so much; sometimes also there is trouble from buying heifers that are in calf. For the last four years I have shipped my cattle to Toronto or Montreal. I have often been asked the question, "Would you advise farmers to ship their cattle?" If you have a first-class lot you may do better by shipping, but if not, I would say by all means sell at home if you can. I have seen cattle sold in Montreal at from $5 to $10 per head less than they could be bought at their owner's stable, because they were off condition and the market was bad. I sold a load of heifers that weighed 1,100 pounds at $4.62½ per hundred, while I saw steers equally as good in form and weighing from two to three hundred pounds more sold at $4.00 per hundred, the reason for the difference being that the heifers were fitted while the steers were not. If the steers had been as fat as the heifers they would have sold for $5.00 per hundred on account of being heavier, as the space on board ship is by the head not weight; so that a fourteen hundred pound animal can be shipped for the same money as one weighing eleven hundred pounds. Below is data concerning my cattle:

Cost of each animal when put into the stable		$26.00
Ration:		
15 lbs. cut straw at $4 per ton	3.0	cents.
Chopped oats at $16 per ton, bran at $12 per ton, making a mixture costing 7 mills per pound, 6 lbs. of mixture per head each day	4.2	"
	7.2	"

Cost of feed per day, 7c. and 2 mills for 170 days	12 24
Interest on $26 at 6 per cent. for 10 months	1.30
I pay myself for buying per head	1.00
Cost of cutting straw and drawing meal and bran per head	.80
Oil cake 35c., salt and sulphur 10c. per head	.45
Grass at $2.50 per acre for 2½ months	4 00
Total cost when finished	$45 89

I count that manure pays well for the work of feeding. Now, whatever I can sell at over and above $45.89 per head will be direct profit. But suppose I can only sell for $45.89 per head, I will still have profit in an indirect way. I have been paid for my trouble, I have sold my feed to myself at market prices, thereby saving the expense of taking to market, and by feeding it I have enriched the farm, whereas if I had sold the grain and fodder I would have impoverished my farm.

What weight are your heifers? About 1,100 pounds.

How much oil cake do you feed them? About ¾ of a teacupful once a day.

Do you wet the feed? No.

How often do you give salt, and how much? Twice a week; about a handful.

How much sulphur do you feed, and how often? A tablespoonful once a week, but if I see signs of illness, twice or three times a week.

Are you ever troubled with lice on cattle? If so, what do you do for them? A week or two after I stable them I dust a teaspoonful of hellebore along their backs from horns to tails, and repeat if I see signs of lice.

Is there not danger of poison from the hellebore? I never had any trouble.

THE BREEDING, FEEDING AND HANDLING OF BEEFING CATTLE.

By A. P. Ketchen, Brucefield, Ont.

There is an old adage that "well begun is half done," and this applies with peculiar emphasis to cattle husbandry, for if we wish to achieve success in this or in any other line, it is of paramount importance that we start right. Let it be remembered that the prime requisites to success are: first, good cattle; second, good food; and third, good judgment. In setting out to found a herd of beefing cattle, perhaps the first thing to be done will be to decide in our own mind just the particular class or type of cattle we intend to keep, being guided in this largely by the demands of the market, and making our own tastes a secondary consideration. Having decided on the type of cattle we intend keeping, let us select our foundation stock with an eye single to the production of that particular type and no other. This will ensure uniformity in our herd, and in many other ways will be a very potent factor in those things which go to make success or failure. Acting on the principle that the best is none too good, we will find it to our advantage to pay good prices for good cattle, and be content with fewer of them. To illustrate this point, let A and B represent two young men starting. Each has $200 to invest in cattle. A goes to some good stockman and buys four first-class cows at a cost of $50 each, while B attends the auction sales in the neighborhood and succeeds in making his $200 purchase six cows at a cost of $33 each. Let us see which has made the best investment. Each feeds about the same amount of feed per head per annum, say $30 worth. A's cows make him an annual return of $35, consisting of a calf worth $15, and butter worth $20, which will leave a clear profit on his feed of $5 per head, or $20 for the herd. Of B's cows, each makes $20 worth of butter and drops him a calf worth $8, making a total of $28, or a loss of $2 per head, or a deficit on the herd of $12. Follow this out for ten years, and you find A with $200 in the bank, while B is $120 in

debt, and this is no exaggerated statement of the difference between a well-bred grade and the common cattle of the country, but is borne out by the experience of prominent and successful cattle men. Mr. Britton, of Toronto, gave evidence before the Agricultural Commission as follows: "In 1873 I bought 103 common native cattle back of Peterborough. They were three years old, and I thought I would try an experiment with them. I tied them up in two rows, and next to them I put two rows of well-bred grades from near Goderich. I fed these cattle for seven months, and the common cattle consumed the most feed and only gained 130 pounds per head, while the grades gained 270 pounds" (notice the difference in gain on the same feed); "when sold I got $4 63 per hundredweight for the common cattle, and $5 37½ for the grades, or a difference in favor of the grades of $16 per head." It is not enough that cattle have two or three crosses of pure blood in them, but it is the cattle of the right type that feed best. Mr. John McMillan, M.P., of Huron, one of the most successful cattlemen in the Province, says: "I will give you one sample of what I saw in the cattle market of Glasgow. Standing together with two Canadian farmers in one of the sale booths we saw six steers sold. They would average about 1,325 pounds, all grades, but a little rough. The highest price paid was £16, 10s. The next animal was a well-bred, round-ribbed, smooth, compact little beast that would weigh about 1,250, which was sold for £18, 10s. Here were £2, or $10, more money for an animal seventy-five pounds lighter in weight." It is worth noticing that these "smooth, compact little beasts" are just the kind of cattle that can be produced at a minimum cost to the feeder. So I repeat that we should be very careful in founding our herd, to work ourselves into the right class of cattle, even though we have to be content with fewer of them. It is better to gain $5 per head on four cattle than to lose $2 per head on six.

Having secured our cows, it becomes our duty to cast about for a sire of the right stamp to mate them; and although I could be content with good grade cows, I would lay it down as an imperative rule that the sire be pure-bred. It is not enough that he be registered in the herd book, but we should endeavor to see that he comes of a good strain of cattle, for there are good and bad, or good and better, even among the pure-breds, and the further we can trace his pedigree through a line of good feeding cattle, the better will be our chances of getting good profitable calves from him. But no matter how good a pedigree an animal may have, unless he has individual merit in himself, I would reject him, for although it is just possible that by virtue of his breeding he might prove to be a good stock-getter, yet we have no means of knowing that until we try him, and the margin of profit in any case is so narrow that we cannot afford to take risks. He should have a broad, straight back, ribs well sprung and deep, broad over the shoulder and crops, broad and full in the chest, indicative of a hearty, rugged constitution, buttocks well let down, legs short and well set under him; he should be distinctly masculine, but not coarse in the head, with a full, mild eye, and of a quiet, contented disposition, and all inside of a fine, mellow, silky hide; or in other words, he must be what stockmen call a good handler. Having founded our herd, it becomes our duty to maintain and increase the standard of excellence, always with our mind's eye fixed on the same type with which we started.

So much for the breeding, and now for a word about the feeding. A few years ago a person could scarcely pick up an agricultural paper but he would find some one dilating on the merits of "Breed vs. Feed" or "Feed vs. Breed." But in this enlightened age we have come to recognize the fact that neither breed nor feed will of themselves, separately, and alone, produce satisfactory results; but that it is when we get these two factors together that we have a right to expect paying returns. We will start with the calf, and here again the old adage holds good that "Well begun is half done," for by long odds the most important period in an animal's life is the first twelve months. It has been said that you must start to rear a calf ten months before he is dropped. That is, that in order to have strong, lusty calves it is necessary to feed the dams well during pregnancy. They should be in a good, thrifty, gaining condition, not too fat, of course, but in "good heart." I like to have the calves dropped in the fall; it gives a better chance to take care of them and teach them to eat, and I have noticed that in nine cases out of ten the calf dropped in the fall will be a better animal at thirty months than the

spring calf will be at thirty-six months; besides this there is a decided advantage in having cows milking fresh during the winter, when dairy produce is at a maximum price. We separate the calf from the mother as soon as dry, and feed new milk for the first three weeks, gradually changing to skim milk, which has been warmed to about the temperature of new milk. It is a good plan to add a little boiled flaxseed or pea meal to the milk; if the pea meal is used it should be well boiled before adding to the milk, otherwise it will scour the calf. When the calf is about two or three months old we teach it to eat a little chopped oats mixed with bran, and by keeping a bunch of nice sweet clover hay on hand it is surprising how soon it will learn to nibble at it. This will pay handsomely, for it has been proven by careful experiment time and again that while a hundred weight can be added to the weight of a calf at a cost of about $3.50, it costs nearly $12 00 to make the same gain on an animal three years old. These may be startling figures, but they are nevertheless facts. To corroborate this statement, let me quote from an address by Mr. Thomas McMillan. He says, "To show how much cheaper beef can be produced the younger the animals are, let me quote an experiment conducted by Groff Bros, of Elmira, who in their day were among the most successful feeders in Ontario, carrying off the first premiums both in this country and in Chicago. Two steers bred by themselves weighed at twelve months 1,000 pounds, and cost $34.67 or $3.46 per hundred weight. The same steers gained during the second period of twelve months 500 pounds each, and cost $52 13 or $10.42 per hundred weight. During the third period of twelve months they gained 650 pounds each, and cost $81.50 or $12.53 per hundred weight. These figures are borne out by Stewart, a standard authority on feeding animals. He found the average cost per hundred weight of nine animals at twelve months to be $3.39; ditto, from twelve to twenty-four months, $7.97; and from twenty four to thirty-six months, $12.54." Hence you see the importance of early maturity and good feeding right from birth; and here is where the fall calf gets the advantage over his competitor calved in the spring. He is apt to be better cared for during the winter, and when he is weaned he is turned out on the fresh green grass in the spring, so that he receives little or no check, but goes on growing, and with ordinary care you will have no further trouble with him until he is ready for the finishing stalls. Whenever practicable the farmer should finish his own cattle, if for no other reason than that when sold as stockers he is parting with a large percentage of the fertility of his farm. A stocker is mostly made up of bones and muscle; the bones containing a large amount of phosphoric acid, and the muscles a large amount of nitrogen, while during the finishing period the animal gains in weight and value, and leaves you a very much more valuable manure. The fat taken from the food has little or no manurial value. When preparing for the finishing period, we must take care that the cattle do not lose in the fall what they have gained during the summer. To prevent this we lie in our cattle during the cold nights and turn them out again during the day. In this way the change from field to stall is not so violent. It is not wise to begin feeding too heavily at first, but keep gradually increasing the ration until you are feeding all the animal will feed up clean. The time has gone by when we depend on hay and grain as a ration and still hope for a profit, but we must turn our attention to the production of cheaper food. For this purpose perhaps corn, whether preserved in the silo or saved as fodder, fills the bill more nearly than any other article. We feed a large quantity of turnips ourselves, and we find that with real good corn fodder and turnips we can keep our cattle gaining right along at a very small cost. Peas and oats sown thick and cured as hay, makes a very cheap and satisfactory fodder, and is rapidly becoming popular. We sow three bushels per acre, equal parts of each, and on fairly good land it will yield fully three tons per acre of excellent hay, and when well cured it makes excellent feed, in my opinion better than hay. It is much better than timothy hay for cattle, or in fact for any stock. If run through the cutting box and fed with a few roots, cattle will do well on it with very little chop When feeding grain we find it an advantge to feed a mixture of two or three kinds, say one of barley, one of peas, two of oats, and two of bran. We find that cattle do much better when fed a mixture of this kind than when fed exclusively on one kind of grain.

I will mention a few of the smaller details and close. In the first place I would say feed regularly, for regularity is one of the first principles of good feeding When an

animal becomes accustomed to getting its feed at a certain time every day, it will rise and look for it, and if kept waiting will worry and fret, thus weakening the digestive organs so that they are not in a position to properly digest and assimilate the food when it is given. Then make the cattle as comfortable as possible, so as to induce them to lie down, and never disturb them except at the regular feeding time. It will pay to curry or card the cattle say three times a week, for an animal which is getting very little exercise, and is being highly fed, is liable to skin disorders which cause an itching irritation in the skin and make the animal very uncomfortable and restless. An occasional carding will relieve this by removing the scurf and keeping the pores of the skin open and clean. Keep off vermin by giving a little sulphur in the feed occasionally, and dusting a little along the back. Salt regularly, say three times a week; and *finally* treat your cattle kindly. I know a prominent and successful cattle man who says that he would dismiss a man on the spot if he found him abusing or ill-treating an animal. He argues (and I believe correctly) that if a steer is unduly excited or annoyed it will take three days of good feeding to make it up. So you see that it is not a matter of mere sentiment, but a matter of dollars and cents when I say look carefully after the small details of your business, for after all it is by attention to the details that success must be attained in any calling.

KEEPING COWS FOR PROFIT.

By D. N. McIntyre, Paisley.

The present depressed condition of the prices of almost all farm products has brought us face to face with two great questions. First, how can we produce the greatest quantity, from the least ground, at the least cost? Second, what shall we do with the food? Some say by their actions sell it, but they themselves are being sold. By all means let us feed what we grow, and let cows form the base of our operations. I do not advocate that we should buy expensive cattle, giving three or four dollars for pedigree for every dollar given for cow. Let us select from the cows we have those that give the fullest pail, having at the same time due respect to the symmetry of the animal. She should be rangy, of good size, capable, when properly fed, of giving a large quantity of milk, and of rearing a calf which when raised and fatted will suit the taste of the most aristocratic Englishman; and let us not forget that the value of the calf as a feeder has a direct bearing on the value of the cow. There is not much use at the present time of advocating the breeding either of acute milkers or beefers, because our people are not yet educated to feed them properly. Let us make the best use of what we have, improving them as we go along. The climatic conditions of our country are such that our cattle are exposed to a great deal of cold and rainy weather in the fall, while our winters are so long that we do not care to house them before it is really necessary, for it means both extra work and extra feed. Again in the spring they are kept in the stable until the grass is good, the weather warm, and the conditions favorable to animal comfort. It has been the general custom to have the cows come in in the spring, the object being to have a heavy flow of milk during the summer months, and by the end of December allowing them to go dry for the next four or five months, during which time they would be boarded as cheaply as possible. I wish to say in passing, that too many of our stables are used as boarding-houses, from which the occupants emerge in the spring without having paid either principal or interest on what they have consumed. It is a well known fact that exposure to cold, wet weather very quickly reduces the flow of milk, and that when there is a decrease in the flow it is very difficult to again raise it to what it was. This is exactly what happens in the fall of the year; hence we concluded to try another scheme, which is to have the cows come in shortly after they are stabled in the fall, say from the middle of November to the end of the year. When well fed, cows maintain a good flow of milk all winter, and when let out to grass about the middle of May there is no abate-

ment; they milk almost as well as if they came in in the spring until the cold weather comes in the fall, when they require to go dry for about six or at the most seven weeks. These cows, however, must be liberally fed during the winter, not simply kept alive (or boarded), and here is the vital question. These animals have to be kept alive anyway which takes so much food, say one feed of hay or corn, two feeds of straw, and a half bushel of turnips. How much more is it necessary to feed in order to have them give a fair flow of milk? If eight pound of meal be added to the above ration, and an extra feed of corn or mangels substituted for the turnips, there will be no trouble about the milk. Thus, for the extra eight pounds of meal, there will be a product of sixteen cents worth of milk, and the next fall the calves will be worth five dollars each more than the ordinary spring calves. This also solves the problem of stock raising in districts where cheese factories abound. The whole tendency of the present time is along the lines of the factory system, both for the manufacture of butter and cheese. These factories only run from five to six months of the year. The proprietors require interest on the invested capital, and the makers require salary enough to keep them a full year. Were these factories running ten months in the year the proprietors would require very little more profit and the makers very little more salary. The cost of manufacturing would be reduced and the farmers would receive dividends from their cows almost all the year. Why then should we farmers not go into winter dairying as a body, keep more cows and feed them better? It is a common saying among dairymen that no cow should be kept that will not give 6,000 pounds of milk in a year when properly fed, and I consider that does not place the minimum limit of what we should expect any too high. It has already been stated that cows should not be dry for a longer period than seven weeks. This leaves 316 days which at an average of 20 pounds per day, or 10 pounds (half a pail) each milking, gives 6,320 pounds of milk per year. Suppose that on an average it takes 28 pounds of milk to make a pound of butter, this would make 225 pounds. Or suppose it requires 10½ pounds of milk to be the average for a pound of cheese; 6,320 pounds would make 602 pounds. I am well aware of the fact that this is probably one-third more than the present average, yet I am satisfied that providing the cows are handled along the lines indicated in this paper the foregoing results can be realized.

OUTLOOK OF THE HEAVY HORSE TRADE.

By Alex. Galbraith, Janesville, Wis., Secretary American Clydesdale Stud Book.

The outlook for the future of any branch of trade must necessarily be gauged by a combined view of the past with the conditions which govern the present, or are likely to govern the future. We cannot, of course, rely entirely on history repeating itself, but it is always instructive to glance back over such period as our memory will carry us safely, or examine historical data beyond that time, and study the causes which brought about certain results in any branch of business or trade. Looking at the American horse trade as a whole, (and by this I include that of Canada as well, for the reason that they are intertwined and more or less dependent on each other), there has been during the last forty years three periods of great depression in the horse business. From 1857 to the outbreak of the Civil War in 1861, business of all kinds was very dull, but we learn on the authority of such veterans as W. Berry, of Chicago, that the horse business was especially bad and unprofitable to all interested. Mr. Berry says that prices were as low during that period as they have ever been in recent years, but the war demand gave them a "fillip" and increased values enormously, with the result that the farmers obtained good paying prices up till the commercial panic of 1873. In the latter year everything in the United States seemed to go to pieces, and although confidence was soon restored, business of all kinds was greatly depressed for a period of nearly five years. During this time horses suffered in value very greatly, the only happy exceptions to the universal rule of low prices, being in the case of a comparatively few pure-bred animals,—mostly Clydesdales—which were introduced from Canada and Great Britain for breeding pur-

Bellrood. (4446)

poses by those early pioneers in the line of improved stock. A taste for better horses sprang up gradually all over the continent; importations from Europe were made on a large and rapidly increasing scale, and with the commercial and agricultural prosperity which Canada and the United States enjoyed during the "eighties," it was not surprising that breeding was overdone, and that values of horses, like everything else, became inflated. The year 1893 brought to the United States another panic more depressing, disastrous and far-reaching in its consequences than any that had preceded it. Banks and business houses all over the country went under; foreign investors withdrew their money; values of everything took a substantial tumble, and since then prices of almost every commodity have fallen very materially, and still remain low. What wonder is it then, that horses in common with everything else, should have depreciated? What with the over production of nondescript and inferior horses, the extended uses of electricity, the bicycle craze, and the universal industrial depression, it is surprising that there should be any market for horses at all. The overproduction referred to, was mostly between the years 1886 and 1890. Those were the "boom" years, and the stupendous number of horses bred during that period are now either at work on the farm, the lumber woods or the city, or on the market, or in their graves. In 1891 and 1892 a greatly reduced number of mares were bred—prices having commenced to subside—and since 1892 the breeding of horses has been greatly curtailed in Canada, and virtually abandoned in the United States; probably not one-fourth the number of colts being now raised that will be required to meet the demands of our home trade. The meaning of this is that horses of five years old and over are still plentiful; three year olds and four year olds are not nearly so plentiful, while two year old, yearlings, and sucking colts are extremely scarce, and will be correspondingly dear as they grow up. Another circumstance which has still further depreciated values, has been the panicky unreasoning haste of the American farmer to sell off his horses and mares, and get entirely out of the business. He has forced on an overcrowded market, everything in the horse line old enough for work that he could possibly spare, and in doing so has of course made heavy sacrifices in price. Now the question arises, where are we? What is to be the future? Are bicycles, moto-cycles, and trolley cars to supersede the horse? Is our noble equine friend to be forever relegated to a back seat in the chariot of invention? We think not. We are suffering from a combination of unfortunate circumstances; we are paying the just penalty of indiscriminate overproduction. We are, it is hoped, learning a lesson that will be ultimately for our good.

"Sweet are the uses of adversity." The good and prosperous times are not all buried in the past. This generation may never see the universal craze for horse-breeding witnessed during the last decade. It is not desirable it should—but so far as human probabilities go, we are likely to see as good prices going for draft horses before this century closes as we ever saw The draft horse is as staple as wheat, and he not only is, but will long remain an absolute necessity of civilization. Talk about the horse being superseded by cable and trolley cars, why the increase in population in our large cities alone, necessitates even now an annual increase in the number of horses, greater than what has been re-placed on the street cars. If such is the case in the present time of depression, what must it be when the business of country gets back to its normal condition? Then look at our foreign trade, steadily and rapidly expanding, with possibilities that are simply stupendous. On a recent visit to England and Scotland the writer took occasion to make enquiries regarding the present market price of various kind of horses there in use. First-class draft geldings, with weight and quality, were selling at from seventy to one hundred pounds, say from three hundred and fifty to five hundred dollars, which is practically as high as ever they were; while an occasional animal good enough for showing would bring considerably more. Medium and undersized draft horses suitable for farm work or light lorries, had suffered in value from the competition with Canadian and American horses, and were selling generally from thirty to fifty pounds, or one hundred and fifty to two hundred and fifty dollars. First-class harness horses possessing strength, style, quality and action, were in active demand at paying prices, and if extra good, would bring fancy figures for gentlemen's carriages. But while every farmer thinks he can raise carriage horses, very

few have the ability to do so successfully. The average breeder finds after producing a number of misfits that he had better have left that branch to some one else with special knowledge of the subject, or more time to handle, and train and market the stock, and to have confined his breeding operations to draft horses. The latter may be less attractive or exciting, but it has compensating advantages in being simpler and safer with greater immunity from blemishes and accidents, and when good judgment is exercised in mating and rearing, the financial results will generally be more satisfactory to the average Canadian or American farmer.

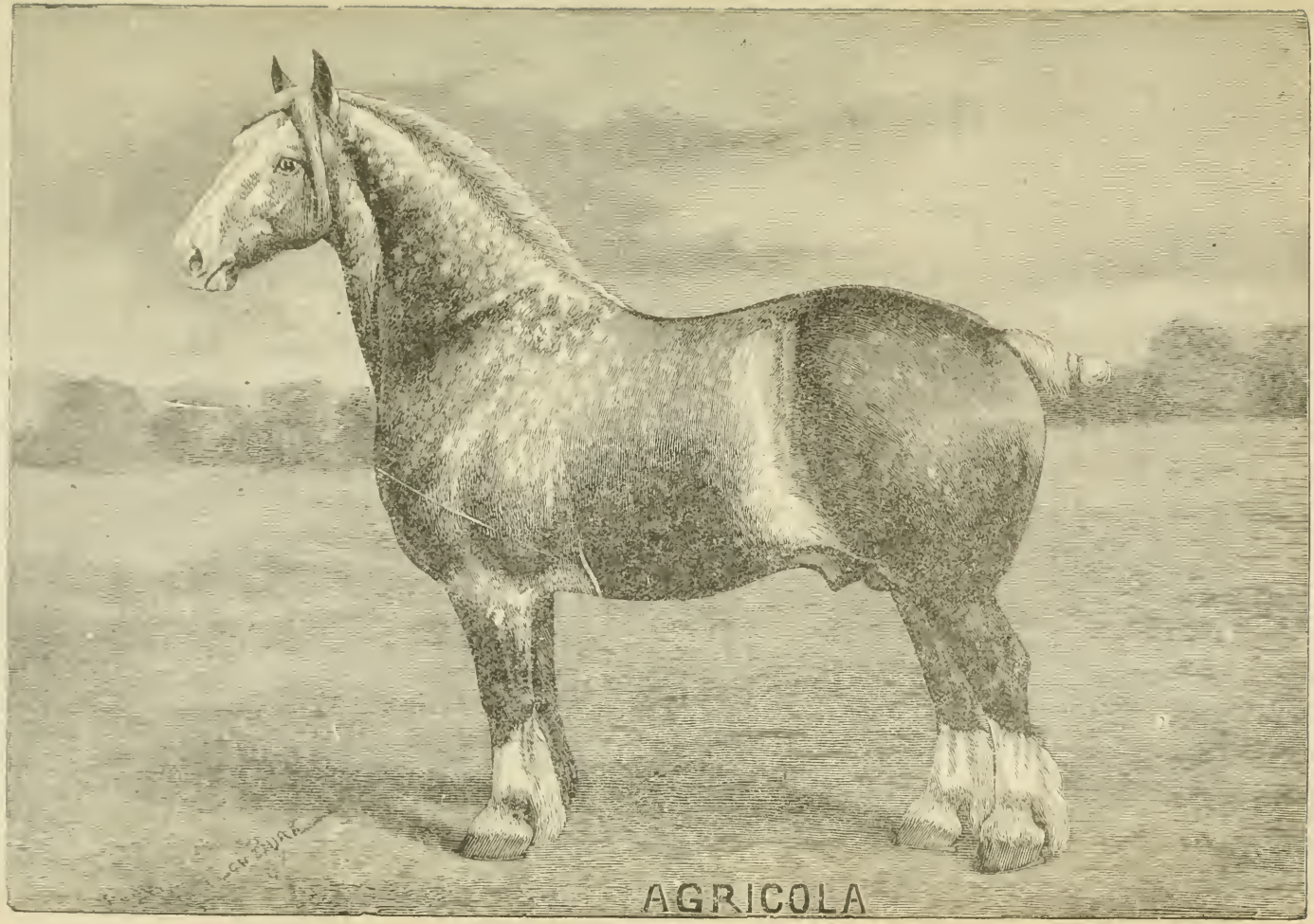
The export trade in horses to which I have referred has grown and developed enormously during the last few years, until now foreign buyers are scouring the country in search of every kind of horse almost that is good enough for European use. Last year no fewer than 30,000 horses of the value of four million dollars, or an average of fully one hundred and thirty dollars each, were sent across from the United States and Canada to Great Britain alone, and this year the exportations are on a still larger scale. Not only so, but thousands of our horses have found their way in France, Germany, Austria, Belgium and other European countries, and with such a variety of foreign markets open to us free of duty, and a connection thoroughly established, it is only a question of merit in our stock whether or not we can retain those valuable outlets for our surplus horses. The writer was repeatedly assured on his recent visit to Europe, that if we on this side of the Atlantic could only send across horses of a little more merit,—particularly more strength, substance, and quality,—whether draft, coach, road or saddle horses,—the buyers over there would gladly take them all in and pay better prices than are now current, but that the common so-called general purpose or street car type of animal never would be of much value. Now what is required for the production of those better horses is more care in the selection of sire and dam, better and more generous treatment of the colts and more intelligence and patience in the handling and breaking of them. In most of these things the American farmer is clearly behind his Canadian neighbor; but even the latter may improve in some of his methods, and in no way can he do so to better purpose than by patronizing the very best sires in the district. This is a point which more than any other I should strongly emphasize, because the craze for cheap sires is, in a large measure, responsible for the enormous proportion of second and third-rate animals in the country. You cannot expect to raise good animals from inferior parents, any more than figs from Canadian thistles. And not only must your parent stock be good themselves, but they must be well bred also, and that happy combination of weight with quality and action must always be kept prominently in view. Another important point, which however can only be learned by study and experience, is how to mate certain animals so that the good properties of both may be preserved as far as possible and the defects remedied; and when a successful "nick" has been once discovered, stay by it. While maintaining all the excellencies which you now have at present in your draft horses, the Canadian farmer should earnestly endeavor to raise his standard of weight by one hundred to two hundred pounds, and if he can do so there is no reason why he cannot have a share of the Glasgow or London trade at those handsome prices which even now are obtainable in those markets for first-class draft geldings.

BREEDING HORSES FOR PROFIT.

By J. H. Reed, Professor Veterinary Science, O. A. C.

This is the subject on which I wrote last year, but as it is such an important one I think I may be excused for again selecting it. During the last few years I have been trying at institute meetings and on other occasions to convince the breeder that there is still a reasonable profit to be made by breeding the proper classes of horses. A good horse of any recognized class is, and always has been, saleable at a reasonable price, but plugs or mongrel bred fellows can scarcely be given away; but, in my opinion, even the latter class will in the near future be worth money. When we consider that the farmers

rather than winter their surplus stock at the present high price of fodder have slaughtered them or sold them for anything they would fetch, to be slaughtered; and also consider that breeding operations have nearly ceased, we begin to wonder where the fresh supply is going to come from. The horses that have been kept will soon be reduced in numbers from various causes; the farmer and others must have horses to do their work, and when a man loses a horse he must look around for another to take its place. The demand is bound to exceed the supply unless the farmer continues to breed, and when that time comes, the man who has a few animals to spare, even though they be inferior, will be able to get a fair price for them. I do not advise any man to breed scrubs. The time was when they could be bred with a reasonable profit, but comparatively speaking, it never did and never will pay to breed them. At the present time a first-class specimen of any class of horse is very hard to find, and when found will command a good price. In order to breed horses with reasonable prospects of profit the breeder must first carefully consider the different classes that are in demand at fair prices; he must then decide which class is most expedient for him to breed. Having decided upon the class, he must exercise reasonable intelligence in the selection of both sires and dams. He must remember that breeding is not a thing of chance, but is governed by fixed laws, the strongest of which is the law of similarity, or like produces like; being careful to select soundness, individuality and good pedigree in both parents, bearing in mind that a parent will, in all probability, transmit to its offspring its own peculiarities and characteristics, whether they be desirable or undesirable. An animal suffering from any disease, whether of an external or internal organ, will transmit to his progeny a predisposition to the same disease. If we recognize this law of breeding, it teaches us to be very careful in the selection of breeding animals. Another important law of breeding is the law of atavism, or striking back. Frequently we notice peculiarities in the offspring which are not noticed in either of the parents, but if we are acquainted with the pedigrees of both parents we observe that like peculiarities existed in a more or less remote ancestor. This teaches us to be careful about pedigree. Having decided upon the class of horse he will breed, the breeder must secure a dam, or more than one if expedient, being careful to secure the very best he can, both as to individuality and pedigree, and then procure the services of the very best stallion he can get for a reasonable stud fee. If he exercises reasonable judgment in the selections there is a great probability of the result being favorable. If he should be disappointed in the first attempt let him not be discouraged, but keep on, and success is bound to crown his efforts. Having first selected the dam she must be carefully studied, and if she has any weak or deficient points, a stallion that is well developed in those points should be chosen to mate with her; on the other hand, if the mare has hyperdevelopment of any point, a stallion with the opposite peculiarities should be chosen. The horses that are in demand at good prices now are the stylish high-actioned carriage horse of good size, the large, stylish, good-actioned roadster, and the saddle horse and hunter. The first class is produced by breeding heavy mares to draft stallions; carriage horses are produced by breeding our ordinary mares, if they do not contain too much cold blood, to the large, stylish, high actioned trotting sire of good quality, the hackney, the coach horse and the thoroughbred. Probably this horse is most frequently produced by crossing a suitable mare with the trotting sire, but we must not patronize this horse simply because he is standard bred and can trot fast, or comes from fast stock. I think the ordinary farmer should not try to breed a race horse at either the trotting or running gait. In selecting a trotting sire to produce carriage horses we should look more to style, quality, action and pedigree than to speed. Extreme action in the carriage horse is the fashion, and in order to get that we must have it in either or both parents. The hackney or coach stallion, if suitably mated, will also produce carriage horses, but we must be careful to have considerable hot blood in the dams, else the progeny will lack quality. The thoroughbred has sired many good carriage horses, but as he lacks the extreme knee and hock action now demanded, we must be careful to select mares that possess this quality. Saddle horses and hunters, which are always in demand, must have thoroughbred blood. They may be produced by crossing a mare with considerable hot blood, a half-breed or better, with the trotting sire, but are usually got by crossing our common mares with the thoroughbred



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stallion. On account of the great prepotency of this horse we can cross a cold-blooded mare with him with greater probability of success than with any other sire, but even here the cross must not be too violent. On account of the great prepotency already mentioned, we must be very careful to select a sound, good-tempered sire of the desired size, as, if we should have any undesirable traits either of conformation, action or disposition, he will in all probability transmit them to his progeny, and in many cases to a more marked degree than he himself possesses. Good saddlers and hunters up to weight are always in demand at fancy prices. In conclusion I would say, if a breeder does not possess a mare suitable for breeding, do not breed at all. In selecting a sire choose the best you can get; then if he has stood in the section previous years, look around among your neighbors and examine his stock. If his stock be satisfactory patronize him; if not, seek further. Some horses, though good individuals and as far as we can ascertain of good pedigree, do not produce well; therefore it is well to examine the horse's stock when possible and profit by other breeders' experience. In no case would I recommend the use of a mongrel sire, even though he be a fine looker, as it is the exception for him to sire a desirable animal. Unfortunately most of our mares are far from being pure bred, and if we mate them with mongrel stallions we cannot reasonably expect good results. Give the cheap mongrel stallion the go-by.

BREEDING AND MANAGEMENT OF HEAVY HORSES.

By Alex. Galbraith.

In the present intensely practical age no excuse need be offered for writing on a subject which, although somewhat trite and frequently handled with great ability, is always fresh and interesting, because it appeals to the farmer's daily life and work. "Not to know at large of things remote from daily use, but that which most concerns us in our humble life, is the true wisdom." Like many other Shakepearian sayings, this is as applicable to-day as when spoken by the Stratford sage three centuries ago. Whatever interest or pleasure the average Canadian farmer may find in outside studies, it is, after all, matters connected with the farm and the means of obtaining a livelihood that are of the most direct and absorbing interest to him. And there is no branch of farming more important, more interesting or more uniformly profitable than the raising of good draft horses. True, we are now suffering from a long continued spell of depression, one of those periodical spells common to all agricultural, mercantile or industrial pursuits, times when for some cause or combination of causes the markets become glutted and values fall below the cost of production. The horse market is glutted to-day, not with good horses, but with inferior ones—the kinds that have been produced from all manner of combinations—while really good horses, and especially good draft horses of weight and quality, are exceedingly scarce, and therefore command correspondingly good prices both in Canada and in Great Britain. I am afraid that many of our American farmers, and possibly some Canadians also, have pursued the same policy in their horse-breeding operations as the Scotchman who confined his devotional reading to the summer season, on the plea that if he bought oil in winter to read by, "the cost micht o'er gang the profit." They have been afraid to invest fifteen or twenty dollars, in the false belief that they were saving the difference, whereas in reality they were generally losing heavily—the pound foolishness being an inevitable sequel to this penny wisdom. Many men, many minds, and different tastes, different views, and different circumstances, must necessarily affect and control our work in various ways in the breeding and management of heavy horses.

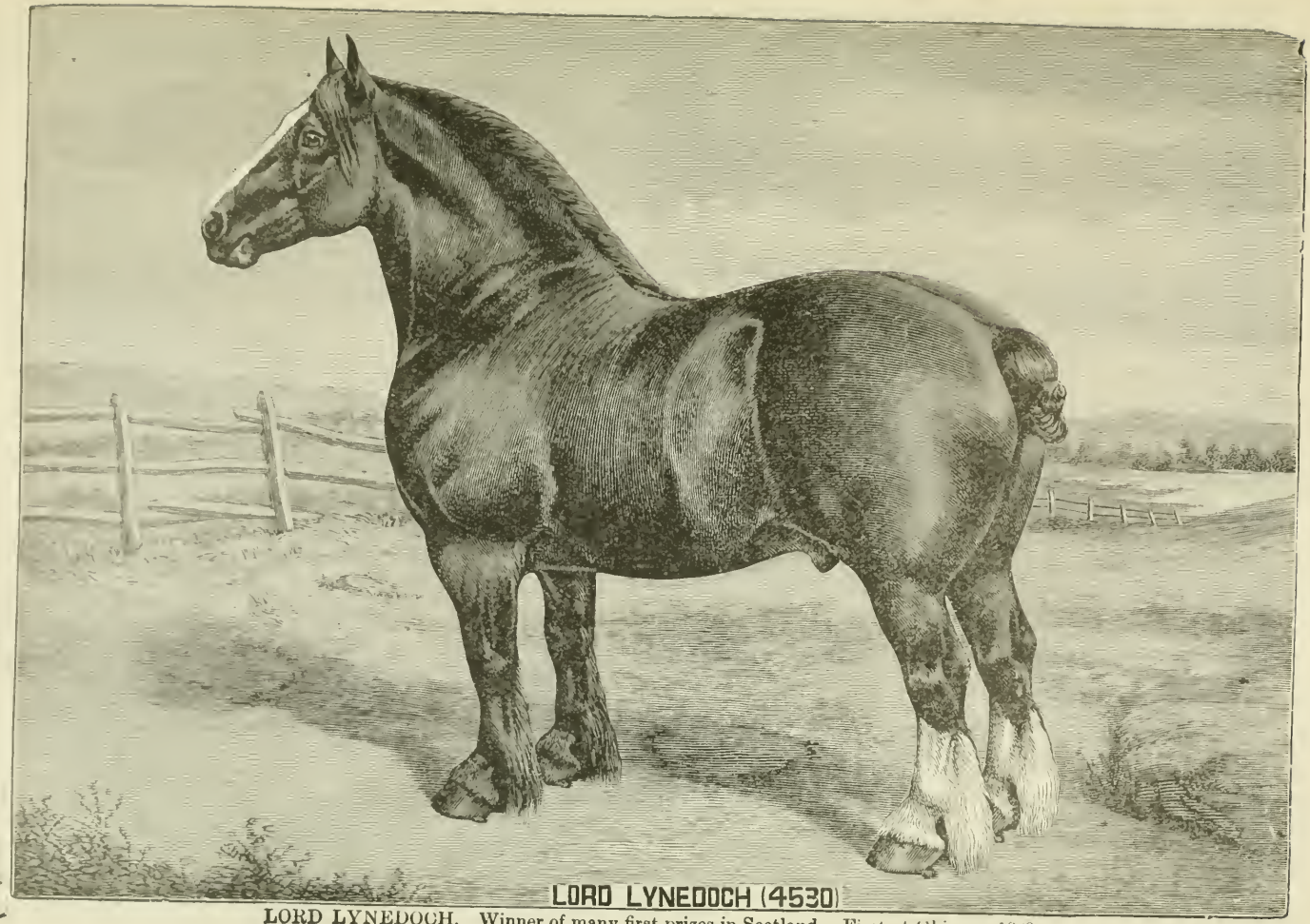
The first branch is breeding, and here let us begin with the brood mare. "A guid coo aff a guid kind" may well be applied to the brood mare. Let her not only be a good individual, but from a good family, if possible, and above all things free from every kind of hereditary disease. Some eight or ten years ago every old, infirm and inferior mare in the country was put to breeding, because fit for nothing else, and so was instrumental

in perpetuating her own infirmities, a blunder for which those breeders are now paying the natural penalty. The model draft mare should weigh not less than one thousand five hundred pounds, and if seventeen hundred pounds all the better. She should be short legged, low, long and wide ; a neat, well-shaped head and slim neck ; lengthy level quarters, with a set of good limbs properly set on ; bone flat and clean ; pasterns good length and oblique ; feet good size, prominent at the heels and free from side bones. Her action should be straight and free, her hocks especially being kept pretty close together ; and, withal, she must have a good disposition. If you have such mares, and particularly such as have proved to be good breeders, do not part with them. In seeking for a stallion to mate with your mares, keep especially in view weight and substance, with quality combined, good pedigree and absolute soundness. No one horse will suit different types of mares, so breeders must use their best judgment in regard to mating, but they should not hesitate to use the very best they can find, even if it costs five or ten dollars extra, as they will generally find it money well invested. If the mare has any prominent defects in conformation, try to have those defects rectified in the stallion, or at any rate, not intensified. For instance, if the mare has a long back or a plain head, the breeder will naturally select a stallion that is good in those points.

The breeding problem is by no means an easy one to solve, and it will often be found that one man's experience differs materially from his neighbour's. Mr. W. R. Trotter, one of the best horsemen in England, maintains that the sire ought always to be especially good in his limbs and his action, as he is much more impressive than the dam in those points, while the latter is more liable to give to the offspring her own head, neck, body and respiratory organs. I cannot say that my own observation confirms this opinion, although there may be something in it. Another theory, which no less an authority than Prof. McCall, of the Glasgow Veterinary College, believes firmly in, is that the male parent influences the female offspring, and *vice versa* ; that whichever parent is strongest and most vigorous in health at the time of mating, that parent will almost always influence the offspring, and even control the sex, a filly being produced if the sire is most vigorous and potent, and a colt if the dam happens to be the stronger. The professor informed me recently that the foregoing observations are the result of over thirty years' experience in breeding, and is applicable to all kinds of animals—the human family not excepted. The subject is a highly interesting and important one, and the theory, coming as it does from a gentleman of the highest standing and very wide experience is well worthy of consideration.

The custom of breeding fillies at three years old is not nearly so general in England as formerly, many people believing that, if well grown, the young mare should be put at two years old, and if undersized she might as well run until four years old, and do some work first. The writer's experience in this country, however, is that better results are generally got by breeding the filly at three, rather than two years old. After the mare is bred she should be tried with a stallion, in fourteen days afterward, and each subsequent week for, say, two months, by which time it may be safely concluded she is with foal. If a young, unbroken filly, she will naturally go at pasture, but if four years old or over she may be worked pretty regularly ; in either case it should be borne in mind that exercise is most essential for both the mare and her offspring. I may as well state, also, that the combined uses of showing and breeding can scarcely be carried on successfully. If a breeder wishes to do full justice to his brood mares and their foals, he cannot take the risk of feeding them up for showing according to modern requirements. It does not, of course, follow that fat mares have always poor little foals, or bad luck in losing them altogether, but experience goes to show that the tendency is in that direction. But, while idleness and fat are undesirable in the brood mare, neither must she be allowed to run down in condition, either through too hard work or bare pastures. In the latter case oats ought to be fed once or twice a day, as required for the sustenance of both the dam and the foal she is carrying. Good nutritious concentrated food ought to be given during pregnancy, and no harm will come through working the mare lightly up to the very day she foals. If the mare is unbroken, see that she receives plenty of exercise every day. Do not shut her up in a stable, but rather let her have the run of a yard or small pasture

all winter, with a stall to go into at night and when storming. On the mare's general health will necessarily depend the condition of the foal; hence it is always desirable to see that her bowels are all right, and particularly as she approaches the time for foaling. An occasional bran mash should be given, and when the time for parturition arrives she should be turned into a box stall that has previously been most thoroughly cleaned out and well bedded with clean straw. A most desirable kind of stall is that whereby the attendant can feed and water the mare without going inside the stall to disturb her. Many mares of a nervous temperament are apt to become more or less excitable at such a time, and the quieter they can be kept the better. The mare should be watched closely day and night, and when the pains commence an examination should be made to find out whether the fœtus is being naturally presented, or, in other words, if the foal is coming all right. In the event of a false presentation, a veterinary surgeon or other skilful person should at once be procured, although in most cases there will be no need of other than ordinary assistance. The most important thing to attend to at birth is the umbilical cord, or navel string. This will usually break itself all right, but if not the attendant should have it cut and tied firmly with soft string, to prevent bleeding. The next duty is to induce the foal to suck, and this can usually be accomplished without much trouble or delay by a little persevering effort on the attendant's part. Sometimes it may be necessary to relieve the foal's bowels by administering a small dose of castor oil—in fact, many successful breeders give this as a matter of course—and occasionally an injection of tepid water is required within the first two or three days. The foal's bowels should be closely watched, as neither constipation nor diarrhœa can go on any length of time without serious results. The greatest source of danger to a young foal, however, is what is known as septicæmia, which results in joint ill and causes the death of the foal within the first few weeks. It is caused by the absorption of diseased germs or organisms through the navel of the foal or the uterus of the mare, through the attendant's hand, and unless a preventive be used and great care exercised in having the box stall scrupulously clean, the worst results are liable to follow. Once the poison is absorbed the case is practically hopeless; swelling of the hocks and other joints being a preliminary symptom of the fatal results which speedily follow. An excellent preventive, in addition to absolute cleanliness, is to bathe the foal's navel at birth and twice daily for three or four days afterward with diluted carbolic acid One of the largest breeders of draft horses in the United States had very heavy losses. some years ago from this trouble, but now uses a preparation called Umbilicure on each foal at time of birth, with the most satisfactory results. After the first day or so the mare and foal may be allowed to run out a part of the day, weather permitting, but in the case of rain they should at once be put under cover, as the woolly texture of the young foal's coat holds moisture, which is apt to cause bowel troub'es. It is not advisable to work the mare while she is suckling a foal (the American custom to the contrary notwithstanding), and if pastures become bare the mare ought to have a daily allowance of green corn or oats during the fall. The foal will gradually learn to nibble at the oats, so that when weaned, at five or six months old, it will be quite independent of its dam's milk. When weaned it should not be left alone, but have some other animal for company, say another foal or an old quiet horse, when outside. The foal at this stage should not be allowed to fall off in condition; indeed, it requires more nutrition the first winter than at any subsequent time, so that its bones and muscles may continue growing all the time. The staple food should be oats (preferably ground), bran and flaxseed, with a few carrots and bright clover or timothy hay. If the hay can be chopped and fed with the grain, so much the better, and if the food can be conveniently cooked, still better results will be got from its use than when fed in its raw state. One highly important matter, which is frequently overlooked by the average farmer, is to see that the foal's feet are properly and regularly rasped down, so as to keep them straight. There is frequently a tendency to twist outwards or inwards, and it is only when the feet are in a soft, cartilaginous state that they can be straightened out. This rasping of the feet during the first year of a colt's life is so important that I would lay special emphasis on it, knowing, as I do, that it is very frequently neglected until too late. As the colt grows up he should be handled frequently and kindly, and at two or three years old broken to harness—it



LORD LYNEDOCH. Winner of many first prizes in Scotland. First at Chicago, 1888.

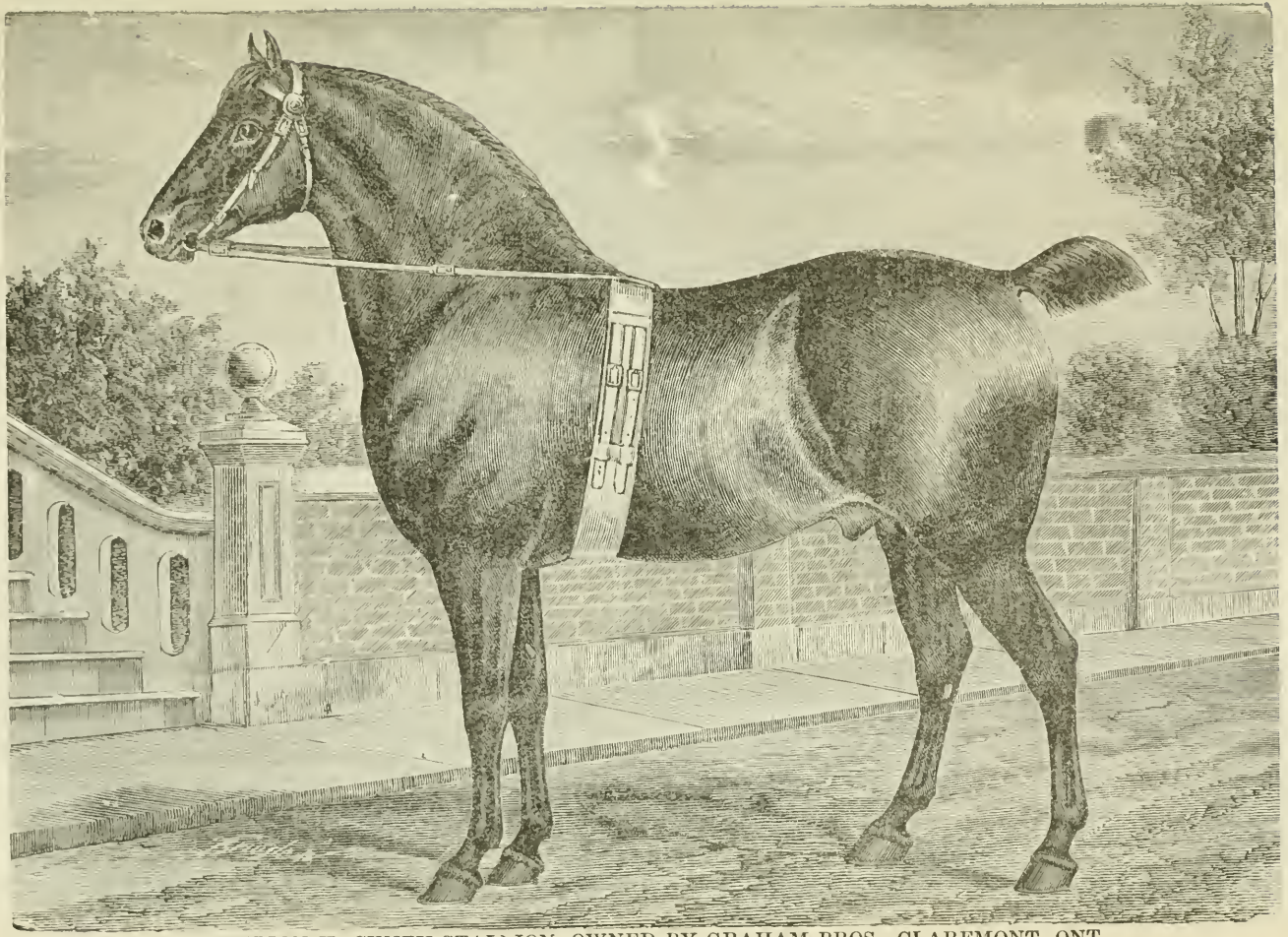
being understood that he has been accustomed to lead in the halter while sucking his dam. As a rule, draft geldings or fillies are very little trouble to break, but may without much preliminary work be hitched up along with their dam or some other quiet horse, and put into plow or waggon without any difficulty or mishap. It is, of course, necessary to accustom them to the bit beforehand, and the first lessons should be given by a patient, level-headed man, as any young animal can easily be spoiled by irrational or unkind treatment. The shoeing of farm horses should receive more consideration than it gets, many blacksmiths ruining the feet of horses by rasping off great portions of the outer crust and cutting out too much of the sole. Those are points which should be let alone. Let him cut down the heels well, so as to promote expansion of the foot, and drive as few nails as possible into the frog. Too little shoeing may be bad, but too much shoeing is infinitely worse. The feeding and watering of horses should also receive the most constant attention. Watering should be done *before feeding* always, and never after feeding. The most suitable water is from a running stream or reservoir; rain water is also good, but well water should only be used after being subjected to the sun and air, and so become oxidized. In feeding a horse it is well to remember that his stomach is extremely small in comparison with that of a cow, and consequently it is essential that he be fed regularly and not too much at one time. The food ought to be nutritious and concentrated, especially when the horse has heavy work to do.

One word about stabling. Horses are social beings, and like to see each other. Where box stalls are used—and they are infinitely preferable to close stalls—they should not be shut off from each other, an iron grating between the stalls being much better than boards or planks, even in the case of stallions. Ventilation in a stable is of primary importance, and most essential to the health of the stock, but care must be taken that between the ingress and egress of air the horse does not stand in a draft, or he may contract rheumatism or other affections that would prove injurious to his health. The drainage of stables ought also to be seen to, many bad effects resulting from choked up drains, which generate gases of the most deadly poison. In marketing draft horses the same rule applies as in any other kind of stock, viz., to have them in the best possible condition, not soft and flabby, but in good, hard flesh and perfect health and vigor, "with skins like velvet." At no time in the past has condition cut more of a figure in the selling value of horses than it does to-day, and a little extra time and money expended with this in view will bring good pecuniary returns to the seller, and at the same time enhance his reputation in the market.

THE HACKNEY HORSE.

By Alex. Galbraith.

"Give a Yorkshireman a halter and he will soon find a horse," is an old-time adage which, although suggestive of a breach of the eighth commandment, really means that his inherent love of horses is so strong that he naturally and instinctively takes to the business. In no county in England is there probably half as many natural born horsemen as in Yorkshire, and it is therefore not surprising that our best coaching and Hackney horses have been bred and developed in the east riding of that noted county; for it cannot be denied that although the county of Norfolk was for generations the home nursery of the Hackney, and that nearly all the best blood of the present day traces back to Norfolk strains, the breeders of Yorkshire have in this generation, and especially in recent years, clearly outstripped their southern neighbors in the production of prize winners. And why? Perhaps for various reasons, but, in the writer's opinion, the main causes have been a judicious infusion of thoroughbred blood, and greater care exercised in the mating of their breeding stock. "Norfolk for action, Yorkshire for quality," is a popular expression, which like most other sayings of the kind contains both truth and error. The fact of old Doyley's "Confidence" being able to get, with unerring certainty, colts of great action, and therefore good sellers, no matter what kind of mares they were from, doubtless led to this celebrated horse, and many others in

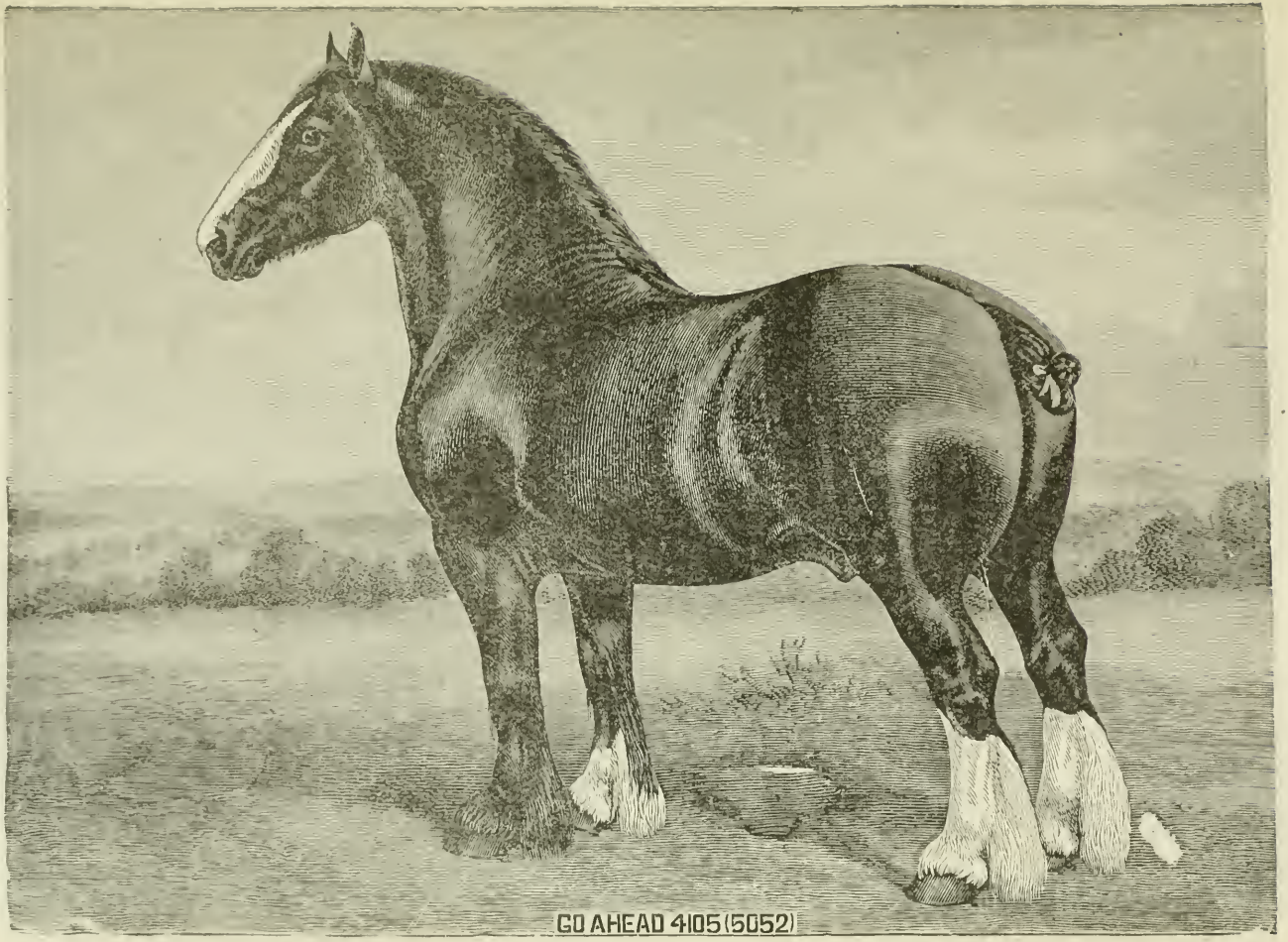


CHAMPION HACKNEY STALLION, OWNED BY GRAHAM BROS., CLAREMONT, ONT.

Norfolk, being used promiscuously on all sorts and conditions of mares, from the sheity up to the carting mare. The result of such breeding is that the county of Norfolk, similar in this respect to many counties and states of America, where a like system of breeding has been pursued—is filled to-day with a heterogenous lot of nondescript horses, and their Yorkshire neighbors can well afford to laugh at the Norfolk breeders' methods, as they themselves walk off with the principal prizes at London every spring. Now there is a wholesome lesson to Canadian and American breeders in the Norfolk men's experience, and it is simply this—that to keep up the quality and the reputation of a county or a district for its equine stock, the utmost care must be taken, and the most jealous eye kept on the merits not only of the sires but the dams as well, and also on their suitability of mating with each other. This knowledge of "nicking" comes only with experience and observation, but the worst kind of mistake a farmer can make, is in being too cheese paring; there being in the present hard times a very strong tendency in the line of economy, which frequently finds expression in the use of cheap and inferior animals. Economy is an admirable virtue, but let it be exercised elsewhere than in the selection of cheap breeding stock.

Since horses of the Hackney type have become popular in this country, it is a very common thing to see in any of the cities, the most veritable plugs with docked tails and heavily weighted shoes—the most spurious kind of imitation Hackney possible, about as like the genuine article as chalk is like cheese. It is such animals as these that set the people talking against the Hackney. Having had no opportunity to see a genuine representative of the breed, the spectator very naturally assumes that the animal he sees in heavy harness, with all the usual "outward adorning," is an average specimen, and, therefore, does not hesitate to condemn the breed, when in reality he has never seen a Hackney.

The origin and history of the breed have been so fully and ably treated in Mr. Henry F. Euren's introduction to the Hackey Stud Book, that I need only refer briefly to a few leading points in it. The name Hackney is at least six hundred years old, and was introduced into England at the time of William the Conqueror. Although existent in England, in a more or less definite form, for several hundred years, the modern Hackney is, however, really a product of the latter half of the last century, and his ancestors, like those of the thoroughbred, were of Arabian stock. Not only so, but his pedigree is considered equally trustworthy with the thoroughbred, and his long line of ancestry has so intensified the strong trotting gait in the breed, that it is hard to imagine a hackney horse on a gallop. He stands usually from fifteen to fifteen and a half hands high, and experience shows that nearly all the best breeding sires, until quite recently, have been within those limits, but the demand for larger horses of late years has had the effect of raising the standard nearly an inch—15.3 being the measurement of such great horses as Ganymede, Cadet, Matchless of Londesboro', and Langton Performer. Over this height—15.3—it is considered that no good Hackney should go, as he then becomes more of a coacher and is out of his class. The prevailing color of Hackneys is chestnut, but there are many bays and browns. He is strongly built, strong and short in his cannon bones, head neat, and wide between the eyes, ears short and active, neck rather strong and well arched, shoulders deep and oblique, and for riding purposes moderately fine on top; chest deep and wide, denoting vigor and vitality; back short and wide; body round and ample, couplings short and loins strong, quarters long and heavily muscled, tail well carried but lower set than in the thoroughbred or Cleveland Bay; thighs powerfully muscled, and well let down into the hind legs, which are strong and cordy; pasterns oblique and of modern length, feet tough, fairly deep and of medium size; action bold, free, straight and lofty, perfect unison being maintained between shoulders, knees and hocks. General characteristics; vigor, promptness, plumpness and high all round action. The Hackney's disposition is perfect, his soundness is probably unequalled in any breed, and his power of endurance is without a parallel. As a "ride and drive" animal he is a universal favorite, and as a general utility horse he comes probably nearer filling the bill than any other breed. His long line of high stepping ancestry makes him prepotent, and enables him to get the most beautiful and attractive horses from the finer boned mares, whether hackney, thoroughbred or trotting bred. As an improver of

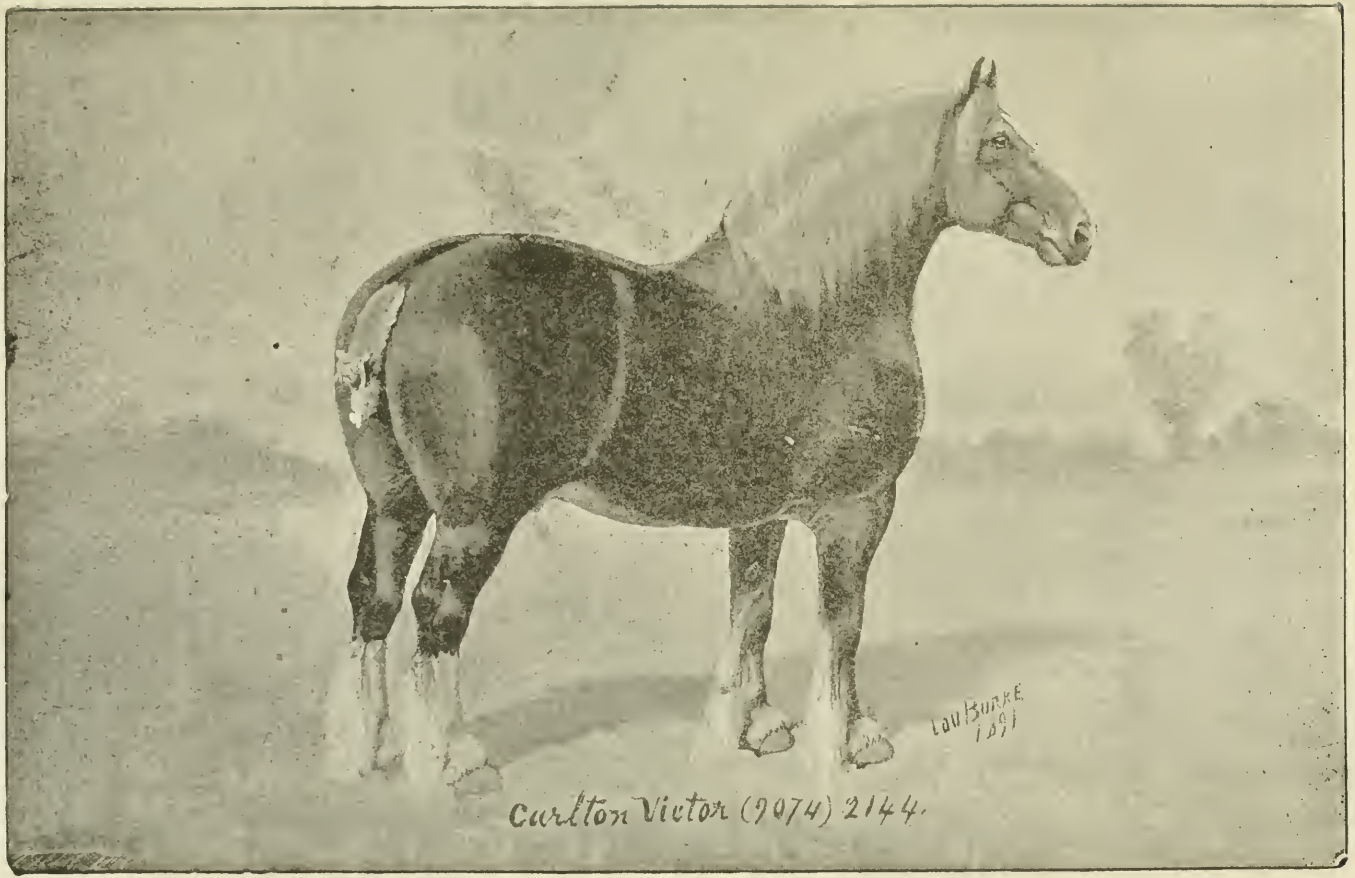


GO AHEAD. Won second at Chicago 1888; won third at Chicago 1889; won third at Chicago 1890. Shipped back to Scotland Dec., 1890.

the horse stock of Canada and the United States, he has proved a distinct success, and it is no mere figure of speech to say he is the most popular horse in America to-day. While the palm for excessive speed, for short distances, at the trot, properly belongs to the United States, that for long distances, carrying weight, must in justice be awarded to the English Hackney. The following are only a few records taken from a long list published in the Stud Book. Old Driver, a son of Shales, foaled in 1765, trotted seventeen miles within an hour. Adonis, in 1787, trotted sixteen miles an hour carrying sixteen stone (224 lbs.) On August 15th, 1790, Shuffler trotted fourteen miles in fifty-six and a half minutes, carrying eighteen stone (252 lbs.) Bishop's brown trotting mare, when eighteen years old, on October 24th, 1791, trotted on the road sixteen miles in fifty-six minutes. Ogden's mare, the dam of Chadd's Black Shales, trotted ten miles in thirty-two minutes, thirty miles in two hours, and forty miles in three hours, carrying eighteen stone (252 lbs.) Cartwright, a gelding nearly thirty years old, trotted thirty-two miles in two hours, on the road between Stilton and Cambridge. The well known Marshland Shales trotted seventeen miles in fifty-eight minutes, and died when thirty-three years old. Bellfounder, imported into the United States by James Booth, of Boston, in 1822, and since noted as sire of the dam of Rysdyk's Hambletonian, was out of the Hackney mare Velocity, that trotted sixteen miles an hour on the Norwich road in 1806, and Bellfounder himself trotted before importation two miles in six minutes, and nine miles in less than thirty minutes, thereby winning a purse of two hundred guineas. There are numerous other instances of the Hackney's capability to trot fast, even generations ago, and had the English people striven after world's records, and like the Americans sacrificed everything to speed, the Hackney would have had more speed and much less beauty and style than he has to-day. Mr. Morten, of Darrel, Scotland, one of the largest and most successful breeders, truly says, "There is an electric fire about a Hackney of the proper sort that makes him the essence of all horses. From the tip of the ear to the last hair in his tail he is the model of symmetry and beauty. Quiet and affectionate in the stable, there is yet in his composition that something which at the merest word or touch can electrify him into the liveliest and brightest of animals." As showing the immense value from a breeding standpoint of such a horse as old Triffit's Fireaway—only a few years dead—Mr. Burdett-Coutts computed that the stock this horse left in Yorkshire represented about £250,000, while that of Doyley's "Confidence" in Norfolk, he estimated at three times that amount, or nearly four million dollars. The possession of such horses in any country is a veritable gold mine.

One word of advice to breeders Don't be too anxious to increase size by choosing overgrown Hackneys for breeding purposes. It is seldom that a stallion, not truly typical of his breed, is himself a uniform or satisfactory breeder. If he is an accident in size or otherwise, he is liable to breed accidentally; and remember that in gaining size you are apt to lose quality, and what is of equal importance, Hackney character. Another matter of importance is to see that the back breeding of your horse is right. There are doubtless many good Hackneys with short or uncertain pedigrees, but such horses are, as a rule, not very reliable breeders. Depend upon it, "blood will tell," and if there should be any extraneous blood in the sire a cross or two back (unless it be thoroughbred, in which case the horse may be all the better for it) it will show itself in the irregularity of the produce. Like all pedigreed stock breeders, the Hackney man must see that the blood he uses on both sides of the house is as good and pure as can be got, and he should preserve that purity with the most jealous care. It is not likely that the Hackney will ever be bred in his purity in Canada to any great extent; it is rather as an improver of the native stock that the hackney sire has been, and will continue to be used. Great honor and credit belong to such enterprising pioneers in the business as Messrs. Cochrane, Beith, Graham Bros., Crossley, and others, all of whom have done excellent work in importing and breeding many splendid specimens of the breed, and so aided largely in popularizing the Hackney in Canada.

In conclusion, I ask two questions: What do our driving horses lack more than anything else? Bone, substance, rotundity of shape, style and action. I think this will be universally admitted. If so, what breed possesses those characteristics in the most marked degree, and is most likely to impart them to his offspring? There can be but one answer —the Hackney.



Carlton Victor (9074) 2144.

POULTRY DEPARTMENT.

HOW TO MAKE THE MOST MONEY OUT OF POULTRY ON THE FARM.

By J. E. Meyer, Kossuth.

The first essential to successful and profitable poultry raising is suitable quarters; this includes soil, shade water and houses. Any dry well-drained soil is suitable—anything but low lying heavy soil that lacks drainage. Shade is of the greatest importance, so that the best place to build the poultry house is in the orchard. all other things being equal. For instance, every poultry house on the farm should, if possible, be so situated that the fowls can have access to the barn-yard during winter. The more exercise your hens get in the open air the healthier they will be, and if your barn-yard has a southern exposure, as it should have, there will not be many days during parts of which the hens do not venture out to scratch. The poultry house should be warmly built, so warm that water will not freeze even during the coldest weather, but it need not be expensive. Frame is the best material, and it may rest either on a stone wall or on blocks, as you wish. A frame of 2 x 4 inch scantling will support it, and tarred felt should be placed both inside and outside of these scantling, leaving a four inch space between, and over the felt the boards should be nailed to the scantling, matched inside and battened outside. The sheating boards of the roof should be placed tightly together and over them should be placed two layers of tarred felt, one across the other over the roof, and on top of this again should be placed the shingles, boards or water-proof paper that you may use. I prefer a house fifteen feet wide, with the south side not over five feet high and the north side six feet high. Make the south side of the roof longer than the north side and have a three foot walk along the north side. Divide your house into pens of twelve feet square, which will hold twenty-five hens when they have the run of the barn-yard, but remember that the more room they have the better will be the results. Crowded hens, no matter how well housed and fed, will never lay as well, in proportion, as those kept in comparatively small flocks with plenty of room. For instance, a farmer who keeps 100 hens should not keep them crowded together in one flock but should divide them into three or four; but if he is keeping fifty hens in a good sized building he need not divide them.

If you are going to make the most money possible out of your hens you will have them laying in winter. With this as our aim, after we have provided suitable quarters, our next consideration will be to stock our house with the proper machines to make eggs in winter or in other words we will choose such hens as will lay. A hen is really nothing more then a machine for turning food into eggs, just as a cow is a machine for turning food into milk or beef, but as with the cow so with the hen, it is all important that you have the right machine. Now I do not intend to say here what breed you should have or that you should have any breed; take the flock you have at the present time and do the best you can with it. The first thing to be done is to cull your flock over very carefully. Take out all those that are not fully through the moult by January 1st and all those of uncertain age. Leave only those that look red about the head and that are plump and in good condition. If you have any late or half-grown pullets they will be of no use either, and although you may not care to kill them, you are feeding them at a loss when you bring them to maturity during cold instead of warm weather, and while in confinement instead of on an unlimited range. It would have paid you better if you

had destroyed these chickens as soon as hatched, when you would only have lost the eggs which were hidden away and the time the hen wasted in hatching them. However, next year we shall find a way to avoid this loss. The next thing to do is to get all your hens laying. I consider sand the best material for a floor. You should have five or six inches of it, and over this put five or six inches of wheat straw. In this mixture of sand and straw scatter the grain, and at the same time cover it well over so that the hens will be forced to scratch for it. Keep them scratching from morning until night. A lazy hen is an unprofitable hen and the only way to keep her from becoming lazy and unprofitable is to make her work. In feeding we must do our best to imitate the food obtained on free range in summer. We must, besides grain, feed substitues for insects, grass, gravel, (the hen's teeth), etc. You should have on hand then, finely cut second crop clover, mangels turnips, potatoes, cabbages, grit, and meat in some form. There are different and successful ways of feeding. We shall take a sample day. In the morning as soon as light, feed cut clover hay mixed with ground oats and steamed. Put into troughs. Feed only what will be eaten up readily—don't fully satisfy them. You might take boiled potatoes, mashed and mixed with crushed oats while hot, instead of the clover. In an hour after this put up the troughs and scatter a few handfuls of grain amongst the litter, covering every grain as deeply as you can. Repeat this four or five times a day. Have a turnip, a cabbage, or a mangel, and grit where they can help themselves at all times. At night before the hens go to roost feed a full feed of wheat, so that each one may get all it wants. You may use the troughs for this feed, and after all have gone to roost empty out all the grain left in them. Keep perfectly clean fresh water constantly before them. Mix meat of some sort, a little salt, and a little sulphur in their morning feed occasionly. Nothing is better than meat. Fed in a way similar to what I have here outlined the flock of hens you have chosen cannot help but lay through the winter. I have heard farmers lament about their hens, because they were feeding them all the wheat they would eat and yet they refused to lay. Is it any wonder that they did not pay him? Look at the cost of such a method of feeding compared with the one I have outlined. All wheat will never make eggs in paying quantities no matter how carefully it is fed; but fed as this farmer does—throwing it down in filth—it is a wonder it does not kill his hens. Does the same farmer feed his pigs all the peas they will eat and his feeding cattle and milch cows all the chop they will eat, and his horses all the oats they will eat? It is all nonsense to expect his hens to pay when he does not bestow even a fraction of the intelligent care upon them that he does upon his other stock. As February comes round it is time to get ready for the hatching season, because, in order to reap the greater returns we must hatch our chickens as early as possible; March, April and early May being the best months. About the beginning of February then pick out ten of your best females, place them and a *pure-bred male* in a pen made for the purpose and from this pen gather all your eggs for hatching. Use nothing but a pure-bred male and have only one male. Never allow him to run with any of your hens with the exception of these ten, and only as long as you are gathering eggs for hatching. After this pen has been mated about ten days you may use the eggs for hatching. Always set several hens at once, and after they have begun to set test out all the clear eggs and put those left under fewer hens, resetting as many as you can. These clear eggs can be made use of, especially for baking, as there is nothing wrong with them beyond being a little dried up. I heard a gentleman tell that he took a clear or infertile egg that had been under a hen for nine weeks, to a friend who was an egg dealer and asked him if it was a fresh egg. He took it, broke it, and looked at it, and then swallowed it and pronounced it good. For an egg-tester, take the lid of a buiscut-box, cut a hole in the center just large enough to admit most of the egg when held perpendicularly against it. When you hold this with the egg towards you, before a good strong light at night you will be able to tell readily all fertile (dark) from infertile (clear) eggs. The young chicks will repuire to have the very best of care and food. They should be fed often at first, but not before they are twenty-four hours old. I consider stale bread soaked in sweet milk and then pressed dry, granulated oat-meal, and cake (made somewhat as follows with the grain varied as you may

think best: Ground oats, ½; equal quantities of ground wheat and corn or barley; a little salt, flaxseed meal, and meat scraps (in early spring) mixed together, moistened with any kind of milk with a little baking soda added, and the whole baked in a shallow pan in a moderately quick oven) to be as good a variety of food as can well be had for young chickens. Keep wheat (as soon as they can eat it) and fresh water before them always. Feed on clear boards. All your chickens should be hatched by the middle of May, and by June some of your earliest chickens should be ready for market and you should begin to market them right along so that by the beginning of September all of your cockerels should be marketed. During these months you will receive far more per pair than you would if you kept these same chickens until November and December when the markets are always full. You need not study this matter very carefully to see that you will make many times more profit out of your chickens handled in this way, than in the way they are commonly handled. You have been feeding your pullets well all this time so that by October the earliest of them should begin to lay and by December all of them should be at work and continue at it throughout the winter. In order to make room for these pullets you must kill off all the old hens, and the proper time to do so is as soon as they have stopped laying in the fall. You will not get high prices for them but any price will pay you better than keeping them. Any of the hens you have left that are not through moulting early in December should be killed, as they are likely to lay very little during the winter. Keep no hens more than two winters. In order for you to do this it is necessary to have some method by which you can tell the age of your hens. You can for twenty-five or thirty cents buy a little punch by which you can put a hole through the web of the foot of the little chicken. For instance, in '94 as you take the chicks from the nest, put a hole through the outside web of the right foot, in '95 in the inside web of the same foot, and in '96 in the outside web of the left foot. and so on. These holes always remain and if you keep a record you will make no mistakes as to the age of your hens.

I have described in a general way how your growing stock should be handled, and how you should each year lay the foundation for good winter layers. I shall now go back to May. When you ceased gathering eggs for hatching you turned the ten hens out of their pen and yard and allowed them their liberty. Do not allow the male out of his pen. Unless he is very valuable you had better kill him, but if you particularly desire to keep him, keep him alone in that pen. And why should you do this? You remember that hen that stole her nest away and came out in August with a dozen or more chickens which during the winter ate twice as much as any of your large hens and yet never grew nor laid an egg. That rooster was to blame for that. You remember when your wife, who was most careful in gathering the eggs regularly, took the eggs to the grocer he told her several times last summer she brought him half hatched eggs in her basket. That rooster was to blame for that. You remember in the fall when you marketed your carefully packed eggs that you found some of them quite bad and your grocer found even more. That rooster was to blame for that. What good have we to say of this rooster? Why none whatever except that if he is not too old and tough he will be good to eat. Surely then after knowing what trouble he made last year you are not going to allow him his liberty this year.

I shall endeavor to explain to you the difference between eggs laid by hens with a male and those laid by hens without one. The first will contain the germ of life—it is fertilized—the other is not. The fertilized eggs will begin to show signs of life as soon as sufficient heat is applied to it. There is no life whatever in the other egg, and even after being set on nine weeks it is so fresh that it "tastes good." In warm weather life is very easily started in a fertile egg. Even a number of hens setting on a nest to lay in quick succession will start life, and as soon as that life is killed by the egg becoming cold the egg begins slowly but surely to decay. I do not mean to say that an infertile egg is a fresh egg after being set on nine weeks, but I do say, and you will readily understand me, that it is not a decayed egg. Where chickens are raised by the thousands the infertile eggs are always tested out of incubators after four to seven days, and used for baking. To have no males with your laying hens is a gain then in every way and a loss in none. You know

that your fresh eggs are not half hatched. Your grocer will soon know it, too, and will be willing to give you a higher price. Male birds must eat, they don't lay nor do they assist the hens to lay, and so are useless in every way, harmful in many ways and expensive to have about. If you are packing your eggs in summer, you will have no bother getting only good fresh eggs, and you all know how important it is to have only such eggs.

After you succeeded in getting a good supply of eggs in winter and all the year round, your next thought will be how to dispose of them to the greatest advantage. There are plenty of people in our large towns and villages who would willingly pay more than the ordinary market price for fresh eggs if they were certain that they were getting the genuine article. First-class grocers will be glad to get such eggs, and so will really first-class hotels. In order to obtain a first-class price it will be necessary to have an established reputation, and a good way to get this is to stamp your eggs, so that those using them and finding them better than they have been in the habit of getting will ask for them, thus creating a demand for your eggs and enabling you to command a higher price. In spring and during the summer when the price of eggs has fallen, it will pay best to pack them and market them in the fall when prices have risen. With the care you have taken in packing you need have no fear of obtaining the highest price.

Besides hens, those farmers who have proper facilities can make considerable profit out of ducks, turkeys and geese. Ducks should be forced and marketed at nine and ten weeks of age, to obtain the greatest profit. In fact my experience has been that there is no money in them if they are starved all summer and only fed a little so as to market about Christmas.

Never sell your old geese, as they improve with age. They should have water. Young ducklings need not have access to running water as they require only enough to drink. Poultry kept in orchards greatly assist in increasing the yield and quality of the fruit. They enrich the land and are untiring in their search for insects which have become so troublesome to fruit growers. If you confine your fowls in the plum orchard the curculio will soon be exterminated and your crop of fruit greatly increased. I have not in this address told you how many dollars and cents you can make out of your poultry, but my aim has been to tell you in a general way how to handle your fowls to the best advantage.

POULTRY ON THE FARM.

By W. J. Haycraft, Agincourt, Ont.

Most farmers consider poultry raising for profit out of the question, and condemn them as an unprofitable and useless adjunct to the farm. At one time the cow was considered of little value, and she was left to shiver during the cold winter on the warm side of a rail fence or the straw stack; she is subject to more humane treatment to day. By the introduction of the silo, by care and comfortable housing, she has been turned into a rent-payer or mortgage lifter. I have always contended that poultry can be raised profitably if properly cared for, but as a rule a pail of grain is thrown on the ground for them two or three times a week; they gorge themselves nearly to death while it lasts and then starve until they get another dose. We hear their owners complaining that "fowl don't pay." Of course they do not pay. Could we expect our cattle, horses or swine to pay under such conditions? Poultry will give as good returns for the money invested if properly cared for as any other stock on the farm. There are five very necessary essentials in poultry breeding: care, housing, good birds, good food and a good market. We should be careful in selection that we get birds suitable to our requirements. We must also be careful to keep them healthy by keeping their surroundings neat and clean. Very few farmers have hen houses other than the open driving shed; here the hens are allowed to roost, it matters not what the weather is or the season of the year. Every farmer should

have a poultry house, and a suitable building can be constructed at small cost. The most suitable house is twelve feet wide and about seven feet high, or may be made with a sloping roof five feet at back and eight feet high in front, but I prefer the former, as I then can have a walk the entire length of the building, and so arranged that I can feed and water the hens and gather the eggs without going into the pen. The length must be governed by the number of fowl intended to keep. It should face the south if possible, and have a good yard for a run. I prefer a frame house, as it is drier than either stone or brick, and consequently more healthy ; it must be made frost proof, with an open space of three or four inches between the outside and inside sheeting ; the roosts should not be more than two feet high and all of a height, with a board floor underneath to catch the droppings. The remainder of the floor should be covered with fine gravel. Roosts and nests should be movable, so as to be easily taken out and cleaned at least once a week. Coal oil put on them is a good preventative for lice. Smoking the house with burning sulphur is also necessary to destroy vermin. Whitewashing is also necessary, and if a little carbolic acid is added so much the better. Land plaster is good to destroy odors in the yard. Now we have the house we must get the bird. I have often been asked, "What is the best breed?" There is no best breed for all purposes. Some are good layers, others are good table fowl, but unfortunately the fowl possessing all the necessary qualities has not been produced yet. The ones that come nearest are the Plymouth Rock and Wyandotte. They are fair layers and unsurpassed as table fowl. If I want eggs alone then I take some of the Minorcas, Andalusians and Leghorns. There are other fowl that are as profitable as the hen, namely, geese, turkeys and ducks. Toulouse geese are prolific layers, but as a rule are poor setters. The Embden are highly recommended, and especially so on account of their white plumage. The Toulouse crossed with our common geese produce the ideal market bird. The best ducks are Pekin, Aylesbury and Rowen. Pekins are large and good feather producers, often producing nearly as many feathers as a goose, but are hard to get in full feather. Aylesburys are highly esteemed as a table fowl. The Rowen is a very good duck, generally in full feather, yields a good quantity of feathers, and a fair sized body, in fact, some claim them to be the largest of the three. The Bronze turkey is, I think, considered the best of turkeys, closely followed by the White Holland. Of all the varieties of fowl the turkey is the most noble ; he reigns supreme over the barnyard ; his right none dare dispute. In selecting our breeding stock of all sorts, we should be very careful to pick large, strong, well formed specimens, as the future stock depends almost entirely on the parent bird. Do not try to economize in the price of the first stock, for when stock of the right stamp can be obtained a little extra price will be amply repaid. Quality, health and size are three essential points in breeding stock. Do not overfeed breeding birds. By using pure-bred males we usually get the best results. The most profit is obtained from young birds ; those older than two years, as a rule, return very little profit. Early hatched birds are the best. The pullets hatched in April, if properly cared for, will commence to lay in October and continue most of the winter. Oat chop, corn meal, and shorts moistened with water make a good morning meal Scraps of meat and vegetables should also be given. Wheat makes as good an evening food as can be got ; buckwheat is also good. For chickens, milk and bread are best. Peas and corn we have found to be good to feed turkeys, geese and ducks during the laying season, as they have a tendency to produce stronger chicks. Leave the chicks in the nest with the hen for about a day, then put in a coop without a bottom and move daily, always on dry ground. Dry bread, or bread dipped in milk, rolled oats, dandelion leaves and onion tops are excellent, when chopped fine, for young turkeys. Feed little and often. Pure water should always be accessible ; milk is also acceptable to all young fowl. If the young chicks are a little weak when they first break the shell, open it so as to get at their mouths and drop a little milk into them, and it will surprise you how it will strengthen them. Fowls should be put on the market in the most attractive form possible. A serious mistake is made in not gathering all eggs regularly each day. Some allow them to lay around for days, and then if they are going to market all the nooks and corners are hunted, and good, bad and indifferent all go as fresh laid ; probably some have been set on for a week, and can you call them fresh? I say positively, no, and that is what ruins our reputation, for if a customer is once deceived it takes a long time to regain confidence.

Another serious mistake farmers make is in keeping too many males. After the breeding season is over, either kill or shut up all males. You will get more eggs and of better keeping quality. How many of you have seen an egg apparently as fresh as ever after having been under a hen for three weeks? At the Ontario Poultry Show of 1894 this question was being discussed, and one member said he had an egg that had been set on for nine weeks. He took it to an expert egg judge to see what he thought of it. He broke it; it looked good and he swallowed it, and pronounced it perfectly fresh. To make poultry raising a success we must have warm houses, good sized runs, vigorous stock, and plenty of brains and capital. The right kind of food, egg food for laying hens, fattening food for market fowls. Do not palm off stale eggs on your customers. Aim to gain a good reputation, and your goods will be in demand. Produce a quantity that will induce buyers to come to your locality. Keep the premises clean. Clean out your pens at least once a week; fight the lice at all times for they are the poultryman's worst enemy. The dust bath will help you greatly in this respect. Nip all diseases in the bud; do not delay, for delays are as dangerous in this business as in any other. Observe regularity in feeding; be active and not easily discouraged, and each year try to improve on the last.

Now I do not claim that every farmer can go to the expense of putting up a new hen house, but there are many who have an open shed that could be made to answer the purpose at very little cost, and would keep fowls comfortable at night and on stormy days. There is no better place for fowl to run than in the barnyard. To have the best results we must keep them busy, and you generally see them at work when they have access to the yard.

THE EGG INDUSTRY.

EXTRACTS FROM AN ADDRESS DELIVERED BY MR. THOMAS A. DUFF, TORONTO, AT CARLETON PLACE, ONT.

I am delighted to see such a large and attentive audience as is here present. North Lanark is noted all over Ontario for the interest shown in poultry matters, and, as far as I can learn, in no other part of the Province have such rapid studies been made in the egg industry than in this particular section of our Province.

CO-OPERATION

The first essential towards a successful business of any kind is co-operation. Unless buyer and seller work together, no good results need be expected. This is nowhere of greater moment than in the egg industry. Perhaps you will ask: What is meant by co-operation? I will endeavor to explain.

HOW TO PLACE EGGS ON THE MARKET.

One of the very first points in which you can co-operate with your buyer is to have all of your eggs perfectly clean. How much more inviting does a basket of nice clean eggs look than a basket of dirty ones? For clean eggs your buyer will be able to get from one to three cents per dozen more than he can get for dirty ones, and so will be able to pay you more. While it is a comparatively easy matter for you to wash your eggs (or such of them as are dirty) when gathered, it would be a matter of utter impossibility for a buyer to wash a large number. All dirty eggs should be washed on the day on which they are gathered; the shell of an egg is porous and is very susceptible to smell. For this reason an egg which is left dirty is sure to become contaminated and lose its flavor. Should you find any difficulty in removing the dirt from the eggs a little soda added to the water will be an advantage. After being thoroughly washed the eggs should be dried.

Use all Faulty Eggs at Home.

Do not place amongst the eggs you intend to sell any which are abnormally small or any which have a flat, wrinkled side, and never send a cracked egg to market. Eggs with a flat or wrinkled side have very thin shells and are sure to break in shipment, and perhaps spoil part of a layer in the egg case. All of the above should be used at home. This is another way in which you can co-operate with the buyer.

Keep the Male Bird away from the Laying Hens.

This, in my opinion, is really the key-note to success. Though the object of an egg is undoubtedly to envelop the germ, yet impregnation of an egg by this germ has no influence upon the actual laying, and a hen will lay at the proper season independently altogether of her being mated with a male bird. Millions of eggs are laid every year which would never hatch, simply because they contain no germ, not having been fecundated. There are, therefore, two classes of eggs—fertile and infertile. A fertile egg is one in which the vital impulse has been communicated by fecundation, and by the term infertile is meant an egg that has never been impregnated, and consequently one that cannot possibly hatch.

My experience has proven that a hen when never mated to a male will lay seventeen per cent. more eggs than when so mated. Allowing that a hen lays one hundred and fifty eggs a year, this means twenty-five more eggs, which at fifteen cents per dozen means thirty-one cents more profit made per hen in a year than you make by allowing the male bird his liberty. On one hundred hens the profit is $31—a considerable item which would feed each hen for six months.

In addition to obtaining more eggs, there are other advantages to be gained. You gain an egg of a better flavor, and one for which a better price will be paid. An infertile egg will keep very much longer than a fertile one, because there is no germ in it to spoil by the heat, and if fertile eggs happen to be left in the nest for a day or two the heat from the hens laying in the same nest will, to some extent, spoil the flavor of the egg. Not so with infertile eggs.

When the breeding season is over see that all male birds are either disposed of or shut up.

Another means of co-operation—

Collecting Eggs and Holding until Marketed.

Be sure and gather your eggs every day. Under no consideration neglect this. After they are gathered and all dirty eggs washed, see that all small, cracked or thin shelled eggs are removed and set apart for home use. Those intended for market should then be placed in the cellar. It would pay every one to have a rack made in which to keep these eggs. It can be made at home and will cost but a trifle. The frame can be made out of 2x2 dressed scantling. A good size for a case is two feet wide, fifteen inches deep and four feet high. The egg trays consist of a frame made of very light material, and the bottom covered with wire gauze. Small triangular pieces of wood are run across the frame of the trays as a division for each row of eggs. The gauze is also tacked to these strips to keep them in place and strengthen the frame. Strips of wood an inch thick and two inches wide should be nailed on the inside of the 2 x 2 uprights so as to slide the trays in and out. This also enables you to put the trays one above the other. By having one more tray than you have trays in the case, a few minutes each day would enable you to turn the eggs. Place the eggs in the trays in full rows, with the large ends all pointing the same way. In turning, place the extra tray over the eggs; grasp the sides of the tray and turn end over end, allowing the large end of the eggs to pass downward and underneath.

The evaporation depends upon the condition under which the egg is kept, and will vary in accordance with these conditions. It is much more rapid in hot weather than in cold—in warm places than in cool.

When eggs are stored in other than cool places the transpiration of oxygen and hydrogen invariably renders them stale. This loss and evaporation are scarcely perceptible in the first week, but are more marked in the second, and of considerable importance in the third. An egg exposed to the weather, but protected from sun, rain and frost, will lose more than half its original weight in twelve months. Under similar conditions twenty-seven eggs at the end of six months will weigh less than twenty-two newly-laid ones. Evaporation is half the annual daily average in winter and double the annual daily average in summer, or a daily loss four times greater in hot weather than in cold.

Experiments have proved that evaporation is very unequal. It is influenced by the size and form of the eggs. In a series of experiments made with new laid eggs, weighing eight, nine and ten eggs to the pound, it was found that eggs weighing ten to the pound lost double that of eggs weighing eight to the pound, and with very small and long eggs the loss in weight assumed a still greater disproportion.

Placing eggs in a cool place minimizes evaporation, and a low temperature is not favorable to the multiplication of the micro-organisms associated with the decomposition of eggs. A pure air where the eggs are stored is absolutely essential.

Upon two rules, apart from preserving processes, depends success in storing eggs for food—cool storage in a pure atmosphere; reversing the eggs at least twice weekly.

The English Market.

The agricultural returns show that nearly fifteen hundred million eggs come into England from abroad. Four hundred millions are laid in Germany, and a hundred and sixty four millions in Russia. Notwithstanding this the demand more than exceeds the supply. Why, therefore, when prices are so low in Canada, can we not obtain a share of this trade, and obtain more for our product? As far as I can at present learn, the prices being paid in England for strictly first-class infertile eggs are from seventeen to twenty-three cents per dozen. If our friends who keep poultry would only take care of their stock, gather the eggs daily, and market none weighing less than seven to the pound, we could easily obtain a large portion of this trade. We already have cold storage on the steamers, and as soon as we get the promised fast service, there should be no difficulty in placing on the English market as fine a class of eggs, and in as good condition, as the Russian, German or French supply. There is an unlimited market for all our summer stock. Of course our home market can far more than use all we produce in winter. What is necessary to obtain this trade, is the co-operation of those who sell eggs with those who buy. You do your part and the buyer will do his

If those engaged in the raising of poultry for eggs will bear these few simple facts in mind, and act upon them, they will always find their buyer in a happy frame of mind, and their pockets containing more dollars at the end of the year than under the old regime.

DAIRY DEPARTMENT.

BREEDING AND REARING DAIRY CATTLE.

By R. S. Stevenson, Ancaster, Ont.

The subject, "Breeding and Rearing of Dairy Cattle," is one that I think should be of considerable interest to the farmers of Ontario at the present time. Every one who has taken the trouble to find out what the average milk production of the cows of Ontario is, must admit that it is too low, and that many of us are keeping two cows to produce what one should. How are we to make improvement in this particular? There are two factors whereby we can accomplish our aim The first is by improving the breeding of our cattle, and the second is by improved methods of feeding. There is no doubt that the foundation of a good herd of dairy cows is breeding; the finish is feeding. Principles are the tools of the breeder. He must understand how to use them, not only as the work lies in his own hands, but the work and experience of others. What is needed for us to-day is a closer study of the science of breeding for a definite purpose. If you want to raise beef cattle, breed from a bull of the beef breeds. If you intend to follow dairying, choose a bull from one of the dairy breeds, and grade up your herd, but don't expect to get a dairy cow from a beef bull. Why? Because the bull has been bred to produce beef cattle. The power to assimilate food and turn it into beef has been bred into him and built up for generations, and the tendency to produce cattle like himself is so strong that no matter what cows you cross him with, the offspring will have the characteristics of beef cattle in a greater or less degree. Now the same is equally true of the dairy breeds. We will suppose we want to produce a dairy cow. I would choose as good a native cow as I could find and one of the dairy form. I would not select a beefy cow even if she was a good milker, as many a beefy cow has been a good milker, but she would not breed that way. Many people think that if they have a good animal individually that she will breed that way. She will not always; sometimes they will, but usually they produce cows inferior for the dairy compared with themselves. Therefore we should take a cow of the dairy form, and she will, when crossed with a well-bred bull of a dairy breed, be almost certain to produce a calf that, if a heifer, will be an improvement on herself as a dairy cow. Why? Simply because she has been bred on dairy lines, and all her tendencies are in that direction. This is where the principles of breeding come in, and I want to show why every farmer should study them. Because his money and his profits are in these animals; the farmer is the man who has to make the money out of the farm; the average farmer has to produce the animals of the country, not the breeder of thoroughbred stock. Therefore the average farmer should also be a breeder, and just as wise in producing an animal suitable for his purpose as the breeder of pure-bred stocks.

Constitution. What is constitution in dairy cows? It is not ability to bear exposure or hard usage, nor hardiness, in the commonly accepted meaning of the word, but it is the capacity of doing good work in the dairy line, the ability to consume large quantaties of food and turn it into milk. You cannot feed constitution into a cow; its something that must be bred in her, hence it is of the greatest importance to breed from cows of good strong constitution. Some farmers have no faith in breeding or the pedigree of animals, and say it is worth nothing; that it is all in the feed, one breed is as good as another. Now if that is the case, how is it we do not find the Clydesdale horse trained for a race-horse, or how would you feed a Jersey cow so as to make a Shorthorn out of her.

Rearing the Calf. We will suppose we have a heifer calf bred as I have suggested. How shall we raise it so as to make a dairy cow? Train up the child in

the way it should go is a good rule in the human family, and it is equally true when applied to the bovine race. Train up the calf in the way you want her to go when she becomes a cow. If you want her for a dairy cow you must feed her in such a way as will give her a tendency to assimilate food and turn it into milk. To do this you must avoid such foods as will make her fat. My own system, in which I have been fairly successful, is to remove the calf from its mother about twenty-four hours after it is dropped, except in exceptional cases of a cow having a caked udder and difficult to get the milk from. After the calf is removed we feed it new milk warm from the cow for about three weeks, fed three times a day. We do not consider twice a day often enough until the calf is a month old, as it becomes too hungry and is liable to take too much at once, which causes scours and indigestion. When the calf is about a month old we gradually substitute sweet skim milk, with about a tablespoonful of old process oil meal; this is to take the place of the butter fat in the whole milk. About this age the calf will begin to nible a little hay, and we tie up a small bunch where it can reach it, and also put a few a few oats, either whole or crushed, in a box, and it quickly learns to eat them. As the calf gets older, a few roots pulped are also given along with some dry oil cake meal and chopped oats. It is generally safe to give calves all of these foods they will take, as they rarely eat more than is good for them, unless allowed to become very hungry. The object is to keep them growing steadily without getting fat; as once the habit of laying on fat is formed, they will often have a tendency that way when they become cows. We usually continue feeding milk until the calf is five or six months old, when we gradually substitute water. Never give sour milk or buttermilk; I have found these to produce indigestion almost invariably, which will make the calf pot-bellied and unthrifty. We keep our calves in loose boxes as much as possible and do not turn to grass until nearly a year old, as I am satisfied that the annoyance from flies more than counterbalances any good they may derive from the run out. We, however, let them out at night sometimes during the summer, but in the day time keep them in as dark a stable as possible. By the time the calves are a year old we tie them up and feed them principally on ensilage and roots with a little grain feed and some hay and straw. Many farmers at this time of the calf's life, stop feeding grain. This is a great mistake, for they are now growing rapidly, or should be, and a very small quantity of grain suffices if fed regularly, and I believe it is the most profitable grain that a farmer can feed. A sharp lookout must be kept for lice, as calves are almost sure to become affected if there is any chance for them to do so. There are several remedies for this purpose. I have found insect powder a very good thing if properly applied. I have also used a sheep dip when cattle become very badly infested. Constant watchfulness is necessary to get rid of this pest, or even keep it in check. There are some people who think if they purchase a pure-bred calf of any breed and pay a fair price, that is all that is necessary. Others think they can take any scrub and by giving good care and attention they will make a success of it. Both are mistaken; good care and good breeding must go together. We cannot expect a calf to grow without good feeding. Nature never intended it to be raised on what was left of a cow's milk after eight or ten children had taken what they wanted.

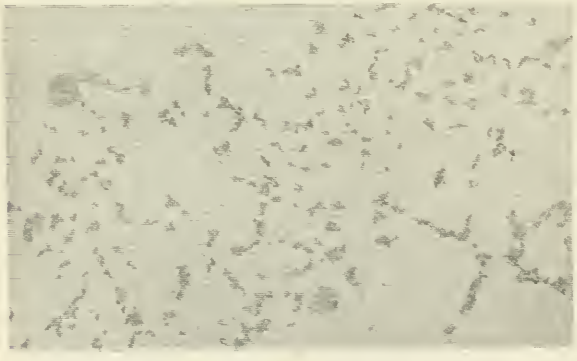
In conclusion, I wish to impress on the minds of the farmers of Ontario, that they will best serve their own interests by caring for the calf.

SOURCES OF CONTAMINATION OF MILK AND METHODS OF PREVENTION.

By F. C. Harrison, B.S.A., Bacteriologist, O.A.C., Guelph.

Every cheesemaker is unfortunately familiar with some form or other of gassy fermentation, made manifest by the presence of holes in the curd in greater or less numbers, from a few pin holes to a curd which will actually float, by reason of its inflation with gas. All this endless trouble and loss to the makers might be saved

by a little care, a small amount of extra time and cleanliness. This is, however, not the only trouble which makers have to contend with; other types of abnormal conditions, as acidity, or over-ripeness of the milk, bad odors, bitterness and many more, are often met with. There is a tendency to ascribe some of these affections above mentioned to the food consumed by the animal, but when these alterations only occur some time *after* milking, it is manifestly unfair to do so, and modern science is showing conclusively that the trouble is due to minute organisms called germs, microbes or bacteria. These so-called bacteria are one-celled plants of microscopic size, so small that 25,000 placed side by side would barely measure an inch. These little organisms were once placed in the animal kingdom, but their plant nature is generally recognized at the present time. They are related to algæ, of which the green, shiny filaments found in ponds and streams may serve as an example, only bacteria contains no leaf green, or chlorophyl, as it is technically called. These tiny forms reproduce by one individual splitting into two, a process called fission; hence bacteria have been called *fission-fungi*. Their manner of reproduction is very rapid, the process having been observed under the microscope to take place in about twenty minutes. Let us therefore assume, as Conn writes, "that a microbe divides into two within an hour, these into four within the next hour, these again into eight in the third hour, and so on; at the end of twenty-four hours the number thus produced would exceed sixteen and a half millions: in two days they would increase to forty-seven trillions, and in a week the number expressing them would be made up of fifty-one figures," unless their food supply became exhausted or some other retarding influence checked it. Bacteria also have another way of reproducing, which is of great importance to the cheesemaker and farmer. This method is by the production of small bodies called *spores*, which are able to resist unfavorable conditions, such as excessive heat, drying, lack of food material, etc. All germs, however, do not have the ability to form spores, but only certain kinds; they have far greater resisting powers than the bacteria from which they are derived.



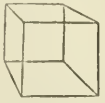
Lacticacia Bacillus, causes the souring of milk.
NOTE.—Individual germs, and where they are massed together in twos and groups, magnified 1,000 times.

Different forms of spores found in Bacteria. Spores solid color.

Having thus briefly glanced at the life history of germs, let us return to their presence in milk. It has been stated that they are the prime cause of all undesirable fermentations in milk, making exception to such affections directly due to feeding, such as turnipy flavor or oniony smell. A fairly safe guide in distinguishing between a physiological trouble and a bacteria one, i.e., due to germs, is the use of the sense of smelling. In the former case the trouble will be most noticeable when the milk is first drawn, whilst in the latter case the trouble will increase with age. It should be remembered, however, that milk will absorb any odor that may be close to it, provided the milk is of a lower temperature than the surrounding atmosphere, and a distinction should be made between the absorption of odor by old milk

and a trouble due to bacteria. Usually a careful survey of the surroundings will at once enable a person to distinguish between these two.

Let us now for a moment turn and examine the sources by which the milk thus becomes seeded with bacteria life. Milk in the udder of a perfectly healthy cow is sterile, that is, there are no germs contained in it; by the use of a perfectly clean milking tube, and by taking certain precautions, milk has been obtained entirely free from germs; but, practically as it comes from the cow, it usually has a number of bacteria in it. Thus we may state that the first contamination comes from the milk first drawn. No matter how well a cow has been milked, a certain quantity of milk will always be left in the teat between milking times; this furnishes not only an excellent food for the germs, which find lodgment there from contact of the lower part of the teat with unclean particles of bedding, dust or manure (all of which materials bear countless hordes of germs), but also the body heat of the animal makes this teat an ideal incubator, where the bacteria may develop under conditions pre eminently suited for their rapid multiplication. Schultz, a German investigator, found in milk tested by him from 55,000 to 78,000 germs per cubic centimetre in the fore milk, and from 0 to 600 in the strippings. From experiments made here I have found on an average 40,000 per cubic centimetre, in an analysis of the first pint of milk drawn from all four teats, and only 3,000 per cubic centimetre from the middle milk; experiments conducted in the month of March, 1896. The commonest germs are those that produce lactic acid, which cause the familiar souring of milk. When we bear in mind the example quoted of the enormous increase of the germs, we at once see what an amount of life is seeded into the milk when 40,000 germs per cubic centimetre are put is to start with. By milking the first few streams from each teat on the ground, we note how the first contamination can be controlled.



This one small cube holds one cubic centimetre.

The second factor of infection is contamination from the animal and milker. Countless germs are resident in particles of filth and manure, in the bedding, on the animal, and clothes of the milker, in the air; in fact, everywhere The hairy coat of the cow affords a resting place for these myriads, and being in a dry condition, the slightest movement effects their dislodgement very often into the milking pail; animals pasturing in the summer, wading in pools and ponds where oftimes there is stagnant water, will pick up from this medium many injurious forms, which, when they find their way into the milk pail, will find in the milk conditions best suited for their growth and multiplication. Even the milker with his dusty clothes contributes many germs to the milk; also the movements during milking, the switching of the animal's tail, all contribute to seed the milk with bacteria. Everyone knows that even in strained milk many particles, such as pieces of fodder, manure, hairs and dirt of all kinds, can be found, and all of these are laden with germs. Some of this infection cannot perhaps be avoided, but as bacteria easily fall from a dry surface, and *cannot* from a moist one, much may be done to lessen the number of germs, by moistening the flanks, udder, and other parts, before milking, care being taken that the coat be thoroughly wet, although not so wet that water will drop from the surface. The milker should not moisten his hands with the first streams of milk, but should wash them before milking, and he should also change his coat for one kept especially for the purpose, which should be washed frequently and should be kept, when not in use, out of the dust. In experiments conducted at Wisconsin Experimental Station, 3,250 germs *per minute* were deposited in a ten inch pail when no precautions were taken, but with precautionary measures only 115 *per minute* were deposited. The dusty air of the barn is also responsible for a number of germs, especially in this case, when feeding dry and dusty fodders; if these were either moistened or fed an hour or so before milking, much might be done to lessen this, also if care were taken to hold the pail at such an angle in order to minimize as much as possible the number of germs which might fall in. Milk, too, should be immediately removed from the barn and strained.

Lastly, there is the contamination arising from the use of unclean utensils. Milk pails, storage cans, strainers and dippers quickly become infected with germs, which find

lodgment in the cracks and seams of the cans. Washing in warm water or scalding, as ordinarily carried out, is totally insufficient to cleanse these utensils, that is, to make them bacteriologically clean or sterile. The resistant spores that are always present can quite easily resist these momentary applications, in fact, may even resist a steam heat for several hours. Knowing that this is the case, care should be taken that the cans be first washed in tepid water, then thoroughly washed, not with water at 160° to 170° or 180° F., but water at 212° F., or boiling, and, if possible, steam should be used as the final cleaner, confining it, if possible, so that it shall penetrate to every crack and crevice. After this final washing, pails, etc., should be left to drain. A good practice, where there is little dust, is to expose them to the sunlight during the day, in some position outside and away from the barn Sunlight has a powerful germicidal action which should not be forgotten. Wooden milk pails, cotton strainers, and the like, should not be used, as the chance of infection is much greater. If the latter are used, they should be thoroughly washed and boiled or steamed for at least half an hour. The practice of carrying the by-products back to the farm in the same cans that the milk was brought in is strongly to be deprecated, as very often the result of one patron's carelessness may in this manner be communicated to all the rest, and be an endless source of annoyance. These by-products are always extremely rich in germ life and in spores, and if they find harbor in the patron's can, to get them out is no easy matter, when steam is not as a rule at the command of a farmer. At Wisconsin Experimental Station, in a sterile milk pail 165 germs per cubic centimetre were found, while that milked in an ordinary pail had 4,265 germs per cubic centimetre, the former remaining sweet nine hours longer than the latter. In both these experiments all other factors of contamination were controlled.

Lastly, the influence of temperature in milk should be borne in mind ; increase in temperature generally bringing about an increase in reproduction. Note the difference between summer and winter milk. Milk should therefore be cooled as soon after milking as possible, as this has an inhibiting or retarding effect on the multiplication of the germs. Milk, if allowed to cool, naturally takes several hours, which gives the best conditions for bacterial growth. In order to hasten this lowering of temperature any of the so-called coolers, if placed in a pure atmosphere are efficacious. The use of ice and suitable aerators all tend to lower the temperature of the milk and increase its keeping quality. Factory men should pay particular attention to the cleanliness of their vats, washing them with boiling water after the preliminary washing with tepid water, and if possible apply steam. This also holds good for all cloths, dippers, strainers and sinks ; and should these simple directions be carried out, much could be done to do away with all these abnormal conditions which are the bane of the maker's life, and would help to stop the many complaints made to the farmers.

HOW TO OBTAIN A GOOD DAIRY HERD.

By Prof. Geo. Harcourt, St. Ann's, Ont.

The importance of having a good dairy herd cannot be overestimated, for the competition the farmer has to contend with is growing keener every year, and the necessity of having a herd of profit producing animals is becoming more and more apparent. In this paper I would like to instance a few points which I think would be of service to any one attempting to build up a good dairy herd.

The right Man. Some one has said that the most important animal upon the farm is the man, and while we may object to being so classed, the fact remains that the statement is not far from the truth. A man who has no love for dairying, who does not love his cows, who does not like to feed them, to pet and care for them, and is not interested in everything that pertains to their welfare, will never make a success of dairying. He had better try something else. I do not care how good a herd of cows you may put in his hands, he will not make a success of the work. We must have the right man, then.

The right Cow. Many farmers think that the common cows of this country are no good for dairy purposes, and if they are to make a success of dairy work they must buy

Jerseys or Holsteins or some other of the dairy breeds. No doubt good herds can be obtained in this way, but it is out of the question for the ordinary farmer to start in this manner. He can, however, begin with what he has, the common stock of the country, and build up from them. There are a goodly number of these common cows which would be uncommonly good cows if they had the proper feed and care and such cows will make a splendid basis upon which to build. If you wish to add a number of pure-bred animals, certainly do so if the purse is long enough, but don't buy a cow because she belongs to any particular breed. Find out if you can what the cow can do at the milk pail, or what the ancestors did. Find out whether she can make a profit for you, and if she will be good foundation stock to build upon. Better only buy one good animal than two inferior ones, but whether you can buy any or none begin with what you have.

Feed. An old Dutchman once said that he believed everybody would like to have a Jersey cow, and he was prepared to tell them how they could get one. Just feed the cow you have like you would a Jersey, and you will think you have one. There is a good deal of truth in what he said, for the beginning of every improved breed of live stock has been better care and better feed. So true is this that it has passed into an adage, "Feed is half of breed," and I am confident that a more liberal treatment of our cows would result in increased profits. Scientists tell us that it takes about two thirds of a full ration to maintain life in an animal's body, and that any profit in the food fed must come from the food fed over and above the food needed to support life. Hence liberal feeding is the most profitable feeding. So then begin with the cows you have but feed them more liberally.

Test the Cows. You will have some good and some poor cows in your herd. How are you going to find out which are the best to keep? Your knowledge of what a typical cow should be like, aided by your eye, will now be brought out in choosing your best cows; but don't stop there, because your ability to pick out a good cow is not infallible. The only way to know positively what a cow is doing for you is to test her. Profits are not so large that we can afford to keep a cow unless we know positively that she is yielding a profit. Obtain a suitable pair of scales at once, and place them in the stable in a convenient place for weighing. I have found a good spring balance a most convenient scale. Now weigh each cow's milk, night and morning, and set it down on a sheet of paper. Tack the sheet on the wall, or if that is not convenient, tack it on a piece of board a little larger than the sheet and hang the board in a place handy to the scale. I have found the following sheet a very good form, as it keeps the weight of each cow in a column easy to total:

Milk Record for month of ....

Date.		Names of cows.												
1.	Morn.													
	Eve.													
2.	Morn.													
	Eve.													
etc.	Morn.													
	Eve.													
30.	Morn.													
	Eve.													
31.	Morn.													
	Eve.													
Totals														

If the whole month's milk cannot be entered on the sheet put as much as you can then begin another. Preserve the sheets or enter the totals in another book for the purpose, and at the end of the year it is an easy matter to total the milk yield for the season. We have now one fact about the cows, but we want another. It is not enough to know how many pounds of milk a cow gives, we want to know also how many pounds of butter she will give in a season. A Babcock tester will be necessary for this. A small one of these can be had for about five dollars, and can do the testing for a number of farmers. A test of the milk once a week will give a fair idea of the amount of butter fat, and the amount for the year can be ascertained from this by adding one-sixth. I know many farmers think they are too busy to attend to this kind of work, but I am confident from my own experience that it pays to take time, for then you can find out which cows are yielding you a profit and which are boarding on you. I know many will object to weighing the milk every time, but the definite knowledge obtained of the ability of each cow more than compensates for any imagined loss of time. Further, I am prepared to say that the weighing of the milk will be the means of increasing the milk yield for the season, because you become interested in the amount of milk each cow gives, you notice at once any shrinkage and it is stopped, because you soon find the cause. Right here is the value of the weighing; it furnishes a check upon what the cows are doing, a check that tells you of poor pasture, scarcity of water, etc., or of extra feed. It will teach you a few things about your cows, It will teach you that it is profitable to supplement poor pastures, and that it is easier to keep up the flow of milk than to try to raise it after it has fallen. If you are not weighing the milk there will be a considerable shrinkage before you are aware of it. If the milk is weighed only once a month you have no check on the cows.

A Standard. From the weighing and testing of milk we learn two facts about our cows: the total milk and butter yield of our cows. Having obtained these, the next step is to decide upon a standard—a minimum yield of product that a cow must give or she is not retained in the herd. A very good standard is that in force in the dairy at the Ontario Agricultural College; it is 6,000 pounds of milk, or 250 pounds of butter, or 600 pounds of cheese in the season. If the product of a cow will not total up to at least one of these amounts in a season she is not kept in the herd, but disposed of at once. Some may think this too high, but it is not too high to have the good profit you should have on your cows. Compare your cows with this standard, and cull at once. You may think you are a good judge of a dairy cow, and that you can estimate her capabilities very accurately, but the testing of the cows leaves no room for doubt or mistakes, and it will convince you that you do not know all about the capabilities of your cows. You will probably find that the cow you thought the best is not your best cow, but that another cow of which you did not think very much is your best one. You will also find, unless you have been very successful, that you are keeping at least one-quarter of your cows at an actual loss, and that if you had disposed of them and fed the feed they received to the others you would had more money in your pocket. It has been the experience of others, and it will be yours. It is not the cow that gives the greatest number of pounds of butter or milk or cheese that is really your most profitable cow. It is the cow that produces the greatest amount at the least cost. In the ninety day test at the World's Fair, the best cow cleared a profit of over $73, the poorest a profit of only $24. Turning now to the food account, we find that the cost of the food in both cases was practically the same, yet the one cow had the ability to make three times the profit upon practically the same feed. There are cows in every herd that have this ability—find them out. In these days of keen competition we must reduce the cost of production, and this aspect of the question should always be taken into consideration, along with others.

Cull the Calves. Having found the most profitable cows, save the heifer calves from these cows only; we want their good qualities perpetuated in our herd, not those of the poor ones. We cannot afford to wait until the heifers grow up and become milkers before we test them as to their ability. We must cull the calves. I have touched upon the feeding, testing and weeding of a herd, I would now like to say a word about the breeding.

The Bull. We say the bull is half the herd. So he is, but do we believe it? Is half the value of the herd invested in him? How much more care, yes, and how much more money is given for a bull than for a good cow? If we are trying to build up a good herd, feed well, test the cows and then turn round and use an inferior sire, perhaps one whose whole training and development has been to make beef instead of milk, how can we expect progress? If the progeny of this sire contains fifty per cent of his blood, where does the improvement come in? A stream cannot rise higher than its source. The only way to make progress is to be as careful, if not more so, in the selection of a sire as you would be in the selection of a good cow. His dam and grand-dam, on both sides should be noted for their producing powers, animals whose abilities are superior to those of your own herd. When these abilities are added to those of your herd you may reasonably look for the next generation to be superior in profit producing capabilities, but if the sire's ancestry is inferior to that of your own herd, how can you look for improvement? Yet men do. Such an animal will cost money and time to find him, but I don't see how progress is to be made in any other way. I have said nothing about the breed of the sire, and do not intend to, only this, be sure and get a member of one of the dairy breeds, and having chosen one, stick to it; don't go jumping about, for in four or five generations you can engraft the good qualities of the chosen breed upon your herd.

In conclusion I would like to stamp upon the mind of every farmer three words: Feed, weed, breed. I could wish that he might never forget them but practice them, for I belive they are the highway to success and the way a dairyman must walk if he is to make a success of the work to-day.

NOTES ON THE DAIRY INDUSTRY OF ONTARIO

By Prof. H. H. Dean, B.S.A.

Some general observations.

The season of 1895 was a particularly trying one on the dairy industry of the Province. Short pastures, causing a poor milk yield, together with low prices, had a very depressing effect on this hitherto flourishing branch of farming. The short pastures were possibly a blessing in disguise. Had the milk flow been normal or above the average, prices would in all probability have received such a set back that it would take years to recover. As it was, prices are looking up, and the prospects for cheese are better. The London correspondent of "the Trade Bulletin," Montreal, under date of May 2nd, 1896, writes as follows: "There has been quite a lively market in cheese, and business has been brisker therein than for many months, the present position being, however, stronger than for many seasons, and the prospects for the new make extremely bright." Some of the causes of low prices in cheese last year were, first, the speculation of buyers in 1894, who paid higher prices for fall goods than the market would warrant. These cheese, which should have been consumed in the winter of 1894-5, were held in hopes of an advancing market, to "let the buyers out." These fall cheese came into competition with the spring goods of 1895, and caused a panic in the market. Second, cheap meats from Australia and other countries competed with cheese in supplying the British artisan with nitrogenous or muscle forming food. A firm in Glasgow informed me at the time of my visit there in August, 1895, that they had already handled that year 10,000 cases of Australian rabbits. Each case contained fifty-six tins, and each tin contained one rabbit. Frozen mutton was also very cheap. Third, filled cheese competed with the genuine article, to the detriment of the latter. Fourth, overproduction or under-consumption played an important part in settling prices. Fifth, in some cases poor quality in the cheese caused a lessening demand.

One buyer (Canadian) said to the writer last winter that he had not seen so many poor cheese since he had been in the business as were made in 1895. As a result of the dulness in cheese in 1895, many of our factories are being changed to creameries for 1896. At the low price of butter, which is fourteen cents to fifteen cents at present (June), it can scarcely be a paying change. A number of the winter creameries located in cheese factories made butter up to and after the 1st of May, in order to meet the demand for "no fodder cheese." As a consequence of these things, very few fodder cheese have been made. This will relieve the markets, and as a consequence prices are likely to average better for 1896 than they did for 1895.

Our winter creameries had a successful season. With a good home demand and a fairly good export demand, patrons of winter creameries have found it very profitable. Cheese in summer and butter in winter is a paying policy for the dairyman in most parts of the Province.

Will it pay to dairy?

The question very naturally arises at this time, will it pay to keep cows at present prices of dairy products? The best answer to give is the result of experience by our successful dairymen. I quote from a letter received from Mr. W. C. Shearer, Bright, Ont., one of our most successful young dairy farmers: "We averaged eighteen cows in 1895. Four of these were two year old heifers with first calf. The cows averaged three hundred and thirty-three pounds of butter each, which sold for $76. Calves kept and sold valued at $9 per cow. Hogs to the value of $7 were sold for each cow kept. This makes a total of $92 per cow for products sold. Their feed consisting of silage, grain and pasture, cost $35 each, leaving a net profit of $57 per cow. We have two hundred loads of manure which we consider equal to the straw and other rough fodder used." Fifty-seven dollars per cow profit is a very good showing for a season like 1895.

Notes on Cheese Dairying.

The preparation of cheese for curing needs to be looked after as carefully as ever. It would seem that the syndicate plan of having several factories placed under the supervision of a competent instructor in order to insure a better and uniform quality, is a good one. The results from the syndicate in Western Ontario will be looked forward to with interest. The paying of patrons according to some honest and just rule should be adopted by all our factories. Every factory should have a Babcock tester, and should employ a maker who understands how to use it. The addition of two to the fat readings, and apportioning the dividends on this basis, has been found a just rule by the Dairy Department of the Ontario Agricultural College.

The plan of returning whey to patrons in the milk cans ought to be discontinued. In order to improve the quality of Canadian cheese this practice ought to be abandoned. If patrons insist on having the whey, let them provide barrels or separate cans for its return to the farm.

The selling of cheese on the Dairy Boards of Trade is recommended to the salesmen of factories. Do not allow these boards to be abolished, as it will be to the advantage of the buyers and the corresponding disadvantage of the salesmen. Buyers of cheese have a better opportunity to know the state of trade than salesmen. Open competition among the buyers tends to lessen this disadvantage.

The shipment of cheese in refrigerator cars or ships seems to be a new demand of the trade. If it is a good thing, by all means let us have it.

The practice of storing cheese in large quantities in Canada is creating suspicion among British customers. As a consequence of this suspicion, buyers in the Mother Country are diffident about advancing prices for fear that Canadians will unload a large quantity of cold storage goods on the market and "swamp" prices. It is evident that some one must store cheese for the winter trade, but let it be done above board, in order to restore waning confidence in the British market.

Notes on Butter-dairying.

The cream separator is bound to play an important part in the butter industry of Ontario. We can never obtain an equal footing with other countries until we abandon the wasteful, and bad flavored practice of setting milk in all kinds of dishes, in all sorts of places, and tended by all conditions of men and women. In samples of skim-milk tested by the Dairy Department of the Ontario Agricultural College in the spring of 1896, which samples were obtained from farmers in the vicinity of Guelph, we found one and two per cent. of butter fat in them. From one-quarter to one half of the butter is lost in the skim-milk by this wasteful method of creaming. In the manufacture of butter for the British market, it should be washed less, salted lighter, colored less, worked more, and be packed more solidly than for the Canadian trade. The square box lined with paraffine wax and parchment paper, and of such a shape that the butter will easily drop out of it, is the best kind of package for the export trade. Unless the boxes are make about one-half inch smaller in the bottom than on top, they should be nailed together with wire nails which may be removed by means of a nail-puller, thus allowing the box to fall apart. This leaves the butter in a solid block on the counter of the British retail merchant. Our creameries should be provided with cold storage in which the butter may be kept at or below freezing point soon after it is made. Where cold storage is not practicable the butter should be shipped out regularly at least once a week. It is a great mistake to hold large quantities of butter at the creamery with no means of preventing it from spoiling. Thousands of dollars are lost every year by holding butter too long at a moderate or warm temperature. Fresh butter of good flavor and body should be supplied to consumers. Stale butter ought to be banished for ever from Ontario; at least its shipment to British markets ought to be prohibited. The official inspection of every package marked Canadian (for export trade) would be a good move.

Needs of the Dairy Industry.

First, better cows fed on cheaper food, and a regular supply of milk to cheese factories and creameries all the year round. Second, the manufacturing needs to be done in the very best manner possible. There is room for great improvement in the making of both cheese and butter. A course at one of the three dairy schools in Ontario would benefit every cheese and butter-maker in the country. Many farmers' sons and daughters who make butter at home ought to avail themselves of the opportunity given them to improve themselves at the dairy schools. Third, the cost of producing milk, cheese and butter must be made as low as possible, in order to make any profit at present prices. Fourth, improved methods of transportation by rail and boat are needed. A cold storage on land and sea is required for delivery of goods in proper condition. Fifth, earliest co-operation of all parties concerned and the application of scientific principles to every branch of the dairy industry.

DAIRYING FOR PROFIT.

By S. M. Clemens, Drayton.

The first thing to consider in starting a dairy is the selection of the cows, and care should be taken to get the best possible cows for the work to be performed, that is, to give the largest quantity of pure, rich milk for the amount of food consumed. Many beginners start with anything that will give milk. This you will find to be a mistake, nor is it profitable to try and combine milk and beef; if you try to mix the beef and milk types you may get a general purpose cow, general for everything and good for nothing. I do not intend to advocate any special breed, but get the best you can for the work of butter and cheese producing. Having got the cows, the next thing is, how are we going to feed them so as to get the largest returns for the food they

eat? In the summer a great many think that the only thing to do to get the best results from their cows is to turn them into the pasture field and give them nothing but what grass they can gather, but we find that in such a dry summer as we had last year, we must do something more or they will not give us profit. To make dairying profitable, we must not depend on large pasture fields for food for our cows, for we can grow other green foods which will give larger returns and not take as much land; if it does add to the labor of looking after the cows it also adds to the profit, and the land saved from the pasture will grow a good share of the coarse grains needed to feed them in winter. Usually the grass is good until we can grow green peas and oats, either grown separately or together. I also find it adds to the profit of the dairy to feed bran and oatmeal all summer, as it increases the flow of milk. A great many who fed green corn found that it did not increase the flow of milk as they expected; the corn was not matured enough to make a proper ration, and the most the cow could do was to hold her flesh, the flow of milk not being increased. If you had added four or five pounds of mixed meal daily with the corn ration, you would have found that your cows would have given a good profit for the extra cost. Another thing to be attended to is providing the cheapest food for the cows during the winter. To-day the profitable keeping of cows turns upon the question of what they consume during the winter months, and you must all agree that you cannot feed hay with profit; so we must try and see if we cannot find something cheaper that will be as acceptable and as easily digested for the cows. The cheapest and best food is corn ensilage, rich in heat producing elements, and by adding a little grain we have, I think, the food that will produce the most butter at the least cost. To make the largest profit out of our cows we must have them renewed in the late fall or early winter, so that we can raise the calves before the warm weather comes, and make butter when butter is a good price. Then in the spring when the grass is fresh, the cows that have been milking all winter will flush up and give just as much milk as the cows that have been dry and eaten their heads off all winter and not renewed until spring. Of course we feed our milch cows more than those that are dry, but they have been paying for what they have eaten and leaving a profit besides. We will now come to the milking. A great many think that all that is necessary is to milk the cow twice in twenty-four hours and pay no attention to the time there is between the milking periods. If you want to get the best results you must milk at regular intervals, and as near every twelve hours as possible; if you do not do this your cow is almost sure to go back in her milk. When a number of cows are kept and several milkers employed, they should have their cows allotted to them, and should milk them in regular rotation all the time. The dairy cow is a very nervous animal and does not like strangers around her, and will give down her milk more readily to the person who is in the habit of milking her.

Now it should be the aim of every person engaged in dairying, and particularly in butter-making, to make the best article that it is possible to produce, and to put it up in the most attractive form so that it will bring the top price to the market. A new beginner should not expect to get the highest price the first time he takes butter to market; but by making a first-class article and putting it in the most attractive form, it will create a demand and soon command the best price. Let a person go to market with two baskets of butter equal in quality, the one put up in one-pound rolls nicely wrapped in rice paper and the other in large rolls and not wrapped, and he will soon see which will bring the best price. The one-pound rolls will sell from two to three cents per pound more than the large rolls. You must also get your butter to market as soon as possible after it is made, as it has a much fresher appearance, and the demand to-day is for fresh butter.

BREEDING DAIRY CATTLE.

By A. C. Hallman, New Dundee, Ont.

The breeding of dairy cattle is a subject of much importance. Its importance is seen when we remember the subject is one that every dairyman in this, and in every other country, is interested in, and that the cash balance depends entirely on the quality of cows kept and the way they are cared for. The man who attains the highest success in breeding and dairying must have a love for the calling. He must be an observant man, quick in perception, noticing all the little deatils that constantly confront him. He should be fond of animals, because if he is not he will not be likely to give them the kind and considerate treatment which is necessary. The man who is fond of animals naturally looks carefully after their comforts. In order to make a success of breeding we should know something of that most mysterious of nature's laws, heredity, in order that we may breed intelligently, and thus produce animals that will contribute generously to our profits, The great trouble with our farmers is that they have no clear understanding of these laws. They keed mixing up their herds; they first try one breed, then another, then something else, and so on until they have a mixture of the whole, and then whine over their failure. Heredity is the line of descent in the parents. People look at their children and wonder why they are so unlike themselves. They are not the only parents of the child; they are the last parents. that is all. The child has thousands of parents, and it is the remote ancestors of the child that mark its character a thousand times more than the last parentage. This we call heredity. Few men have been intelligent enough to adhere strictly to this law. There are some, and wherever these laws have been intelligently observed we see the fruits of it and are cheered by the results.

Having these laws firmly rivetted in our minds, we now launch out. It would be much less of a task to deal with thoroughbreds only in this paper, but since I am here to meet the masses, and in a humble way to give them some food for reflection, I shall endeavor to make the application as broad as possible Having decided on the branch of dairying we wish to pursue, we should select a cow adapted to the business, and breed her in a manner not only to reproduce her own good qualities, but to improve upon them. It may be urged that the average farmer about to engage in dairying cannot afford to purchase thoroughbreds of any breed, nor is this necessary. However at the present low prices thoroughbreds would prove a good investment, and many farmers would find it money well spent just to start with one pair, male and female. Ex-Governor Hoard truly said, "What is the use of wasting a great deal of time in trying to find out whether some cows of the beef breeds can be developed into profitable milkers, when there are now breeds already developed on that line as much as any breeder can hope to attain in fifty years, even if he is then successful? From 50 to 100 years' start in any line is certainly an advantage to any breeder" There is much food for reflection in the above lines. Where the foundation is not laid with thoroughbreds, secure good natives, or grade cows. Test them that you may be sure of their capacity. Keep none but good ones. Aim to secure a herd of uniformly large producers of a good quality of milk best suited for your porticular purpose. Place your ideal high. You will be surprised, with systematic breeding and careful feeding how soon you will change the character of your herd. See whether your cows are boarding you, or you the cows. Times are too close to have any delinquent boarders; take a short cut with the poor ones Their carcasses are worth more to feed you than their product. If your cow makes only 150 pounds of butter in one year, doom her at once (if it is the cow's fault, and not that of the feeder). Replace her with one that is capable, with careful feeding, to give at least 300 pounds per year. When the average Canadian cow gives 3,000 pounds of milk per season, strive to double it, then gradually

rise till you reach 10,000 pounds of milk per year. This is none too high for your standard. The cost of production must not be overlooked. The profitable animal is the one that produces the most at the cheapest cost. Such a herd cannot be picked up in a day, but is the result of careful building and skilful feeding, and good judgment in selection. To accomplish these high attainments, the herd must be headed by a thoroughbred bull of high merit, of the type you are aiming to produce. His breeding must be unquestionable. His ancestry must belong to a line of good performers both in the pail and churn. He should be strong and vigorous, but not coarse, yet masculine in appearance. If of the correct type and breeding, he will be sure to impress his characteristics on his offspring. It is here where heredity shows itself. Blood will tell. It is truly and well said that a bull is half the herd. A good bull should be used as long as possible, then another from the same breed and same general type should be selected. Aged bulls that have proved good sires should not be discarded. If a bull has proved himself a good stock getter, there is no reason why he should not be used until ten years old. By judicious selection in a few years an excellent herd can be built up.

Weeding is always necessary. Here is where expert judgment and practical experience will be of great value. Spare none; let only the fittest survive. One inferior animal will spoil the looks of a whole herd, and if kept for breeding will do untold damage. If the calves and heifers are properly raised they should begin to milk at from twenty-four to thirty months old. Early development is very essential. It is not only that heifers so treated yield a profit at an early age, but they make more useful cows. A heifer with the first calf must have the best attention. It is now we fix her future usefulness. Never allow her to go back on her flow of milk. Keep her supplied with an abundance of rich succulent food. She will pay you back, ten fold. Milk her regularly for at least twelve months. It is now you establish her milking period. If once established it is hard to change. If she needs rest give it between the first and second calving. You can easily regulate this in breeding. Gentleness is worth gold with dairy cows, especially with heifers. Regular milking, skilfully performed pays. The improved cow is like unto an improved machine built on scientific principles.

BOXING AND MARKETING CHEESE.

By I. W. Steinhoff, Stratford, Ont.

In speaking of boxing and marketing cheese, let me say first that there was never a time in the history of Canadian dairying when there was more pressing necessity for us to give our special attention to every point in connection with the manufacture and shipping of cheese, than just at the present. We have had, during the past season, very low prices and a very dull market, and I am sorry to say that one of the discouraging features is that Canadian cheese has not given such universal satisfaction as formerly. I believe we may reasonably expect keener competition in the future from New Zealand and Australia than in the past, as the Canadian method of manufacture is being rapidly adopted in these countries, under the supervision of Mr. James McEwan, who went there from Stratford, Ont. In some instances New Zealand cheese has been taken in preference to Canadian. Scottish farmers are also awakening to the opportunity that lies before them of manufacturing a greater portion of the cheese that is annually imported into Great Britain, claiming that they have more favorable conditions for the manufacture of fine cheese than exists in Canada. There are also indications that would lead us to believe that as an article of food, cheese is not as popular as it used to be, and consumers are more critical as to quality. Hence I think that all will agree that the present is perhaps the most critical period in the history of Canadian dairying. The production of a first-

rate article is the one remedy for the collapse of cheese dairying, and they who seek most earnestly to accomplish this will most successfully combat the bad times. It is a fact that more complaints come back from Britain about the way cheese are boxed than of the quality of the cheese; and I wish to say further, that patrons of factories have a responsibility in connection with the boxing and delivery of cheese that cannot be assumed by anyone else, and it is too bad that so many patrons seem to think that to get the cheese from their factory to the station in any kind of condition and get the money for them, is all that is required.

Marketing. Do not ship, or attempt to ship, uncured cheese, although there may be a slight gain in weight and you thus secure a little quicker settlement at the factory. When such cheese arrive at their destination they are found unsatisfactory, and as a consequence a complaint or perhaps a claim is sent back to the shipper, and your cheese get into bad repute. This applies more directly to spring and fall made cheese, when the weather is cool and the cheese practically cease curing as soon as they leave the factory. On the other hand it is unwise to hold cheese too long in the factory. One salesman from each factory should attend the nearest cheese market regularly, and otherwise keep himself well posted upon current prices, and sell the cheese, when properly cured, for the highest price obtainable. Factories should not speculate by holding, as they cannot force the market, and few factories are fit to hold cheese in during the hot weather after they are about thirty days old. The history of the great majority of cases when salesmen are bid the highest current market price for their cheese and refuse to accept it, is that they hold until forced to sell. It is better for the reputation of the cheese to sell when cured and thus have them go forward into consumption or cold storage, where they can be properly kept.

Boxes. There is a general complaint that the common run of boxes are too light and thin and break too easily. A very light tap upon the corner will often split the box just above the bottom. There are some exceptions where factory men are paying one cent per box more in order to secure stronger cases. In these cases the boxes are made of heavier sides, and the strips around the bottom are about the same width as those used for the lids, which very materially strengthens the box. It would be well if all factory men would adopt such boxes, for, after all, the responsibility rests with the factory men, for if they accept poor boxes simply because they are cheap, the box manufacturers will be quite willing to supply them. Boxes should not be accepted at the factory that have more than two pieces used in either bottom or top, and these should be fitted neatly and tightly together.

Shaving. Boxes should be sufficiently dry to have stopped shrinking before cheese are put into them, and then they should be shaved down level or a little below the edge of the cheese, pains being taken to have this done evenly, and not lower in one place than another, otherwise when cheese are piled eight to ten high the lower ones will be crushed down on one side and become lopsided, presenting a very undesirable shape when taken from the box. Another very objectionable condition that is too prevalent is that cheese are sent to the station standing half an inch to an inch above the edge of the box, or in other words the boxes are too shallow for the cheese. No factory man who is at all interested in the welfare of his cheese should ever allow them to be sent out in this condition.

Scale boards. Two scale boards should at all times be put upon each end of every cheese, as they absorb the surplus moisture and enable the cheese to come from the boxes in far better condition.

Delivery. Then there is a part for which the patrons are responsible, and that is the delivery of the cheese at the station and into the car. It may justly be said that enough has been said and written upon the necessity of having clean wagon boxes for the delivery of cheese, so that dirty boxes would now be a thing unheard of; but such is not the case, and until it is we must keep up the agitation. Only

last summer I saw cheese set out of the wagon upon the ground in the rain, because the drawer was behind a few of his neighbors and would have to wait perhaps twenty minutes or half an hour to unload. A neighbor who was better hearted had to put them into his wagon and draw them to the car. I also saw cheese delivered from wagons with half an inch to an inch of manure in the bottom of the wagon box, a broom having to be used to scrub the filth from the cheese boxes. I appeal in the name of common decency to such patrons to remember they are teaming human food, and a food that will absorb any bad flavors with which it comes in contact. What would they think, if upon going to their merchant to buy butter, sugar, tea, or any other class of goods, they found the packages plastered with dirt from the barnyard? I do not think it unreasonable or asking too much, to make every person who takes cheese from a factory responsible for the delivery of the same into the car which is designed for them, in as good condition as when loaded at the factory, with unavoidable breakages of boxes excepted. I am aware that all that is necessary to overcome these difficulties is to get patrons interested in the ultimate welfare of their cheese, but I am sorry there are still patrons of factories who care so little for the reputation of their cheese, that they will not inconvenience themselves in the slightest to accomplish proper delivery.

Invoices. Neat and correct invoices are a great credit to the cheese-maker or secretary, and it is only fair to say that great improvement has taken place in this direction, which is perhaps due to the fact that a better educated class of young men are entering the business, and the wide-spread influence of the dairy school under the auspices of the Ontario Agricultural College.

Marking Boxes. A great improvement would be to stencil the weight plainly upon the boxes, the same as is done in many factories in Eastern Ontario. If a pencil is used I prefer a blue one, and plain figures large enough to be seen, but not covering the whole side of the box. In conclusion, I repeat that there is a very important part for each patron to perform in order to raise, or even maintain the excellent reputation we have for cheese, and if what I have said shall awaken some of the careless ones to a better performance of their duty, then my highest expectation will be gratified.

HORTICULTURAL DEPARTMENT.

APPLE CULTURE.

By A. W. Peart, B.A., Burlington, Ont.

Soil and Situation. In choosing a site for an orchard, southern and southwestern exposures are the least favorable, vegetation in the spring being earlier and liable to receive severe checks from frosts ; while it also continues later in the fall, and the wood does not go into winter so well ripened. Should your soil be rich no special fertilizing is necessary, but old soils depleted by cropping should be well manured before planting. Plow the manure under, and before setting out the trees thoroughly cultivate and pulverize the soil. Apples require a rich, porous, dry soil, and should the subsoil be wet the field ought to be underdrained previous to planting, care being taken to run the drains between and equi-distant from the rows of trees. Clay, sandy and gravelly loams with a clay or shale subsoil are well adapted for an orchard. Where the subsoil is gravel to a considerable depth a prolonged drouth will wither both the fruit and the trees.

Selecting Nursery Stock. In choosing nursery stock great care should be taken to select only the best. Trees taken from low wet soils very often have a black heart due to the frost. Select thrifty, stocky trees, with straight clean trunks and free from disease and insect pests. Plant them two or three inches deeper than they were in the nursery, cutting away the torn and bruised ends of the roots, and pruning the top back so as to correspond with the roots. If the tree has too much top it will die from drouth. If cropped at all hoe crops should be grown in a young orchard so that it may have sufficient cultivation. Cultivation, in addition to keeping the soil free from weeds, checks evaporation, and during a drouth is equal to showers. Your trees are thus pushed ahead, vigorous and strong. Of course if you pursue the above plan it is necessary to manure almost every year. Should your trees be making too rank a growth, or not fruiting satisfactorily, you might correct this by seeding down with clover for a year or two, cutting it early and leaving it on the ground as a mulch. It may be laid down as a general rule that conditions favorable to a heavy growth of wood are unfavorable to fruiting and *vice versa* ; conditions not favorable to a strong wood growth are favorable to the production of fruit buds. When the orchard reaches maturity cultivate, manure or seed it down and top dress as its condition seems to require ; but never remove hay or grain crops from it, since if you do you rob the trees of their food. It is also a good practice to allow hogs the run of an orchard ; rooting the soil will do no harm, and they will destroy thousands of worms in eating the fallen apples. Apple trees should not be planted less than thirty-five feet apart in ordinary soils. If planted nearer, when they reach maturity there is too much shade, which means an inferior quality of fruit as well as a greater liability to the attacks of fungous diseases. It also makes it very difficult to move ladders around trees when their branches meet and interlace. In short, each tree should have sufficient space to have an individuality of its own.

Pruning. Pruning is absolutely necessary to obtain good fruit. I form the head from three and a half to four and a half feet from the ground, according to the habit of growth of the tree. This is high enough to permit horse cultivation, and yet sufficiently low for the foliage of the branches to afford some shade to the trunk from the sun, thus warding off the attacks of the borer and making a stiff substantial tree. The head should

be formed of three or four branches and never of two, as in the latter case the tree would be very apt to split when bearing a heavy crop. Suckers (cross and superfluous limbs) should be removed every year, the constant aim being to have a well-balanced, evenly-distributed and medium open top. We should avoid cutting away the leading branches of large trees; the wound does not heal over, and often the heart of the stump begins to rot, which by degrees extends to the body of the tree and eventually kills it. The great point is to determine the main branches of the tree when it is young, and afterwards the thinning process alone is necessary year after year. In this way the food of the tree is not wasted on useless limbs but is devoted entirely to the building up of necessary wood and the production of fruit. Pruning may be done any time between the fall of the leaf and a few weeks before the opening of vegetation, so long as the wood is not frozen. I do not advocate pruning in June as it checks the growth of and tends to stunt the tree, although it may promote greater fruiting in exceptional cases.

Windbreaks. Windbreaks of pine or other coniferous trees should be planted along the west and north sides of orchards. They protect the trees from the icy searching winds of winter and reduce the windfalls to a minimum during the autumn when gales are so frequent.

Varieties. I am always diffident about giving a list of apples suitable for a district outside of my own. The soils, situations, climatic peculiarities, etc., of different localities vary so much that it is indeed dangerous ground. In the Burlington district the Duchess for summer, the Ribston Pippin for fall, and the Baldwin and Greening for winter, have been found the most profitable. I have some thirty varieties and give the above the first place, with the King and Northern Spy a good second. As for quality, no apple grown on the American continent can equal the Canadian Northern Spy, but unfortunately it is slow in bearing and somewhat subject to spot. In planting a young orchard, the best plan is to find out what varieties have proved the most profitable and satisfactory in your own locality and plant accordingly. Do not plant many varieties, or yet new and untried ones in a commercial orchard, and thereby save yourself disappointment.

Manures. In regard to fertilizers, well-rotted stable manure and wood ashes form a good combination; the former is rich in nitrogen, while the latter contains quantities of potash and phosphoric acid. In applying manures it is necessary to bear in mind the nature of the soil. Clay soils for example are naturally rich in potash, while sandy or gravelly loams are somewhat deficient. Wood ashes then give to the lighter soils those elements of which they are in need, while clay soils on the other hand usually require more nitrogen. Fifty bushels per acre is a good dressing of ashes, which should be distributed evenly over the soil and not piled up around the trunks of the trees.

Insects and Fungi Nests. In this paper I can only speak of our orchard enemies in a very general way. The chief insects that we have to fight are the codling moth, the canker worm, the oyster shell bark louse, the borer, the tent caterpillar and the fall web worm. The first two insects may be kept in check by the systematic use of Paris green, one-quarter of a pound to fifty gallons of water, with one-half a pound of lime added to prevent the scorching of the leaves by the Paris green. Neglect is to a great extent the cause of the inroads of the bark louse; they are rarely seen upon trees that are well cared for. The best remedies are good care, kerosene emulsion and alkaline washes, such as lye, or a solution of washing soda and soft soap, which is made by dissolving half a pound of soda in a pail of soft water and adding a pint of soft soap. The kerosene emulsion is applied with a spray pump, while the two latter remedies are used to wash the trunk and main branches by means of a broom. These should be used in early June when the young lice are hatching and crawling about. The flat-headed borer attacks the sunny or southwest side of the tree, blackens the bark and leaves sawdust-like particles in its path When they once get into a tree the only remedy is the knife and a piece of wire to trace and kill them. The female moth may in a measure be prevented from depositing her eggs on the bark by washing the trunk early in June and again in July with a solution of washing soda and soft soap made about as thick as paint. The best way to get rid of the caterpillar and fall web worm is to crush their nests by hand. The worst fungus we have to contend against, and

one which is on the increase, is the apple spot or scab. Ample experience has shown that it may be kept in check, if not entirely destroyed, by the use of the copper sulphate and Bordeaux mixtures, the former to be applied before the buds start, and the latter once before the blossoms start and twice after they fall. The Bordeaux mixture with Paris green added serves the double purpose of destroying both the codling moth and the scab.

In conclusion, apple culture may be summed up in four words: *Cultivation, manuring, pruning and spraying.*

HOW TO GROW STRAWBERRIES FOR HOME USE.

By Capt. James Sheppard, Queenston.

Except your soil is very stiff clay you do not need any special preparation for strawberries; let the land be clean and in a good state of cultivation. If hard clay, trench deep in the fall, and if coal ashes can be had, apply a heavy dressing before planting. Plant as early in the spring as the ground will work; make your rows four feet apart, and set plants one foot in the row; pinch off all fruit buds and large leaves; pack the earth firmly around the roots of the plants and keep the ground loose with hoe and cultivation. Do not let the runners start too soon, as that tends to weaken the plant; about the middle of August is soon enough; after that they may be allowed to run, and if kept in along the row will form a solid bed which should not be over a foot or fifteen inches wide. As soon as the ground is frozen in the fall, cover with a thick layer of straw or evergreen boughs. Do not remove the covering until early in the spring, as this mulch keeps the plant back and reduces the damage from frost. Rake off the covering, stir the ground, and put the mulch back between the rows, and no further attention is required until the fruit is ripe. Do not plant many varieties—two or three are enough. Bear in mind that there is a difference in strawberries. Some are perfect flowering varieties known as staminate, which will bear if no other variety is near them; and some other varieties known as pistillate will only bear when planted near staminate varieties. Much disappointment and loss has often arisen from neglect to mark this fact. Do not imagine that after you have planted a strawberry bed it will last a lifetime. Plant a few every year, and as the old rows get grassy and run out, plow down and clean the land with some hoe crop, give a dressing of manure, and you can plant again. For varieties I would name for staminates: Wilson, Williams, Jessie; for pistillates: Crescent, Buback and Haverland.

THE FARMER'S FRUIT GARDEN.

By H. L. Hutt, B.S.A., O.A.C., Guelph.

It has been said that "farmers, as a rule, use less fresh fruit than city people," and I am inclined to believe it is true. The importance of fruit as a diet is recognized by all medical authorities; and the testimony of those who enjoy the use of an abundant supply, goes to show that the fruit garden is, to a great extent, a profitable substitute for grocery accounts, as well as a good alternative for doctor's medicine. Many who are well aware of the value of a fruit supply still fight shy of putting out a small plantation, thinking that they can buy what they need cheaper than they can grow it. In this they are mistaken. But that is not the worst of it. They will not buy the one-hundredth part of what their families would use if they had it to pick for themselves. The truth of the matter is, any farmer who can grow fodder for his cattle cheaper than he can buy it,

can do the same with fruits for his family. Probably the main reason why fruit gardens are not more common throughout the country, is because the majority of farmers are not sufficiently acquainted with the management of the different kinds of fruit to know that they can be grown just about as cheaply as any hoed crop on the farm. When this fact is more generally known, no doubt well kept gardens will become as common as corn fields.

One of the first things to be considered is the selection of a suitable piece of soil. This should be the best on the farm. It should be well drained, either naturally or artificially; situated, if possible, near the house, where it will be convenient not only for the women to gather the fruit, but for the men to utilize to advantage their spare moments in caring for it; and all the better if it can be sheltered from the prevailing winds by an orchard or other windbreak. Land on the farm is not a scarce article, therefore do not scrimp the size of the fruit garden. Make it long—one hundred yards at least—and as wide as you choose. Extend the rows the long way, and as far as possible both ways, so that all the cultivation may be done by horse power instead of hand power. The extent will, of course, vary with the requirements. From one-half to one acre in small fruits should abundantly supply the wants of an ordinary family. In selecting the kinds and determining the number to plant, the aim should be to provide a succession of fruit, fresh or preserved, throughout the year. A succession of fresh fruits may be kept up by having not only a succession of the different kinds of fruits, as strawberries, raspberries, blackberries, etc., but by having early and late varieties of these. I will give the different fruits which should be found in the farmer's garden, mentioning them in the order in which they come to us throughout the season.

Rhubarb, although not a fruit, is the first thing in spring that answers that purpose, and gives us a wholesome foretaste of sweeter things to come. Two or three dozen plants, set about three feet apart in the row, will yield all that is required for a number of years. All this plant needs is clean cultivation and liberal manuring. It is well, too, to break off the large seed stalks whenever they appear, so as not to allow the plants to exhaust themselves by producing seed.

Strawberries are the first fruit of the season, and at that time are perhaps more relished than any other. They are best grown in rows about four feet apart; the plants set about fifteen inches apart in the row. They may be planted in spring or early autumn, but, as with all other fruits, early spring is the best time. Only young plants from a plantation which has not yet fruited should be planted. Planting can be made a very easy operation. Mark out the rows with a corn marker or use a garden line. Open the holes for the plants with a spade by sticking it into the ground five or six inches and then pressing the earth back on each side. Slap in the roots, spreading them out fan-shaped, and close the earth firmly about them again with the feet. Pick off all blossoms the first year. It is well to place the first runners so as not to take root too close together. They may be allowed to spread, forming matted rows about a foot and a half wide. Keep well cultivated and free from weeds. In the fall, as soon as the ground is frozen hard enough to bear a team, cover the rows with a mulch of straw, or better, strawy stable manure. In the spring when severe frosts are over remove the coarsest of this mulch and tread it down between the rows. This will preserve the moisture and insure a good crop of berries even in a dry time. The season of ripening may be prolonged a week or more by leaving a portion of the patch covered for a longer time in the spring. When once planted strawberries will bear fruit for several years, but the longer they are left the more numerous becomes the weeds and the fewer and smaller the berries. As planting out a new lot is much easier than keeping the old ones clean, it is found that we get better berries with less labor by planting out a new lot every spring and plowing up the old one after it has fruited once. The varieties that will give the best results can be determined only by experiments for each locality. It is advisable to start with a few varieties, such as Haverland, Wilson, Buback and Beder Wood, which have established a reputation for themselves in other places, and then test from time to time with these a few of the other varieties which may prove more productive or may be

valuable for extending the season by ripening very early or very late. To insure the fertilization of the blossoms and the setting of fruit, varieties with imperfect blossoms like the Haverland and Buback, should always be grown in adjacent rows to those bearing perfect blossoms, like the Wilson and Beder Wood.

Next in order of ripening come raspberries. These begin to ripen before the last of the strawberries are gone, and with a good collection of varieties extend the season of fresh fruit another month or six weeks. Raspberries should be planted in rows about five feet apart. The plants may be set two or three feet apart in the row, so that they will in time make a close hedge row; but it is a much better plan to arrange the raspberries, blackberries, currants and gooseberries in a block, in rows five feet apart each way, so that horse cultivation may be given both ways. In this way much hard labor will be saved, and the small fruits may be cultivated as cheaply as corn in hills. The cultivation should be thorough. Keep all weeds down and the surface loose and mellow; it will then act as a mulch to retain the moisture. Three inches of surface soil well stirred is better than plowing twice as deep. If the cultivator is started early in the spring and used often enough to keep all weeds down, there is no necessity for plowing among the bushes at any time. Pinching back the tips of the new canes in the summer is advisable in all parts of the country except where the canes have to be laid down in the fall for winter protection. This pinching back should be done as soon as the canes reach two and a half or three feet in height. It causes them to branch out and grow stout and strong so that they will bear their load of fruit without requiring to be staked up to keep it off the ground. The regular annual pruning may be done any time in the fall after the fruit is picked. It consists in cutting out all the old wood that has borne fruit and leaving only four or five of the strongest new canes on each hill. Raspberries begin bearing a couple of years from planting, and with good care will bear profitable crops for ten or twelve years. A new plantation should be set out, however, as soon as the old one shows signs of failing. The following named varieties have proved their excellence in many parts of the country, and make up a collection of the late and early varieties of the different colors: Red—Marlboro' and Cuthbert; black—Souhegan, Hillborn and Gregg; purple—Shaffer, Yellow and Golden Queen. The large blackberry, or bramble, as the wild species is called, is not grown as generally as it should be. Some dislike growing it on account of the sprawling growth of the canes and the stout hooked prickles which they bear. These objectionable features may be overcome by nipping back the young canes when they reach a height of three feet, and wearing a leather glove while cultivating them. The blackberry requires much the same attention and pruning as the raspberry. The fruit begins to ripen after the raspberries are gone, and keeps up a succession of fresh fruit for the table. The Snyder and Stone's Hardy are hardy varieties which will succeed where some of the finer varieties such as Agawam and Taylor cannot be grown.

Currants and gooseberries are perhaps not so much prized in their season as raspberries and strawberries, yet they have a place which can not well be filled by any other fruit. I can well remember from experience that these fruits in the form of jellies and jams often make the most interesting portion of a school boy's lunch. Like raspberries they require clean shallow cultivation, and are always benefited by liberal applications of wood ashes scattered evenly all over the surface of the ground. A mulch of some kind scattered under the bushes before the fruit begins to ripen answers the double purpose of retaining moisture and keeping the fruit free from being splashed with soil during heavy rains. Currants and gooseberries may be grown either in bush or tree form. In the bush form about six branches should be allowed to form the bush. Train these up from the ground, keeping the bush symmetrical. The annual prunning had better be done in the early spring, and consists in removing a couple of the oldest branches that have fruited for two or three years, and allowing a couple of the strongest new shoots to replace them. Shorten in the new wood where necessary to keep the bushes symmetrical. The "worms" common to both currant and gooseberry bushes must be watched for and attended to as soon as they make their appearance. They can easily be killed by spraying the bushes with Paris Green at the rate of a quarter of a

pound to a fifty gallon barrel. A pail of lime water added lessens the liability of the Paris Green to injure the foliage. The following named varieties should give good results in most localities: Currants—Victoria, Fay's Prolific, White Grape, and Black Naples; Gooseberries—Houghton, Dewning, and Whitesmith. So far we have mentioned only the small fruits that go to make up a well-stocked fruit garden.

In addition to these, enough of the larger fruits such as grapes, cherries, plums, apples, and when the climate will permit of it, peaches, pears, and quinces should be grown to provide an abundant supply for home use. In conclusion I would like to give a few general directions applicable to these and most other kinds of fruits. 1st, Cultivate thoroughly and repeatedly, and as soon as possible after every rain. Surface cultivation about fruit trees and bushes is preferable to deep plowing. 2nd, Apply fertilizers liberally; unleached wood ashes is one of the best fertilizers for fruit trees, vines and bushes, and may safely be applied at all times. Barnyard manure should be withheld where there is a tendency to excessive wood growths. Scatter all fertilizers evenly as far as the roots extend. 3rd, Prune every year without fail. For trees, currant, and gooseberry bushes the best time to prune is early in the spring before the buds start. Vines may be pruned in the autumn as soon as the leaves have fallen; and berry bushes in the summer as soon as the fruit is picked. 4th, Keep a viligant watch for injurious insects and fungous diseases. The Bordeaux mixture applied in a fine spray is one of the cheapest and most effective means of preventing nearly all fungous diseases affecting fruits. A simple formula for making this is four pounds copper sulphate, four pounds of lime to forty gallons or a barrel of water. As a combined insecticide and fungicide four ounces Paris Green should be added to a barrel of the mixture. 5th. In conclusion do not expect an abundance of fruit without making an intelligent effort to grow it; but rest assured that with proper management the fruit garden will yield more profit and pleasure than any other equal area on the farm.

CULTIVATION OF THE ORCHARD,

By W. W. Hilborn, Leamington, Ont.

Simcoe county is about the northern limit in which the apple succeeds and it must, therefore, receive special care to make it a very profitable crop. There is no doubt in my opinion but that this fruit can be grown very extensively in this section and give greater returns for the time and money expended than can be obtained in growing most other crops. We all know that grain farming does not pay as it once did. We should therefore look around and see what changes in crops can be made that will pay. There is a large portion of this country admirably adapted to the growth of the apple. The farther north we can perfect this fruit the higher color, finer flavor, and better keeping qualities will it have. These are all points of the greatest importance, and I have visited no locality where they can be obtained to a higher degree. More care and skill, however, is required in the cultivation and management of the orchard where the growing season is somewhat shorter and the cold of winter is more intense. We must aim to get an *early*, vigorous growth of wood, and to ripen the wood and fruit buds thoroughly in the autumn. With this end in view, I would recommend the following method of planting and cultivation of the orchard as likely to give the greatest measure of success:

Selection of Trees. Always select young, healthy trees, two years old from the bud, or not more than three years old from the graft. If they show any appearance of *black heart* do not plant them, as they will not recover. This may be detected by looking at the scars made on the trunk of the tree where the side branches have been prunned off in the nursery. If these wounds have healed over nicely there will be no danger of black heart If they have not healed over, but have turned black, and the bark around them shows a dark discoloration, caused by the sap ooxing out, I would expect to find the heart of the tree dead or discolored, from which they do not recover, and never make healthy trees.

Soil. The soil should be a good friable loam, well drained, either naturally or by underdraining. A northern slope is to be preferred. Select the highest elevation you have, other conditions being equal.

Planting. This should be done when growth begins in the early spring. Plant a little deeper than they were in the nursery. First prune off all injured roots, and one half or more on the top. Dig the holes larger and deeper than required to admit the roots of the tree—use soil of good, medium fertility to put in among them. This should be well rammed in among the roots. Always save the richest soil or loam to put on top as a mulch around the tree. Never let manure come in contact with the roots of any plant or tree when planting. Never plant when the soil is wet enough to cleave together badly when handling. Another important matter is to keep the roots covered while out of the ground ; many a failure can be traced to the neglect of this precaution. My own method is to place a large box on a stoneboat, put the trees in the box and mix wet straw with the roots. Drive along when planting and take out the trees just as wanted. They should be planted at least forty feet apart to give best results, especially now that spraying has to be resorted to.

Cultivation. This is the all-important matter. We find most of the orchards throughout the country are very much neglected in this respect. Especially is this true with old or bearing trees. This gives one the impression that they are now considered old enough to take care of themselves. This method of treatment will pay just as well as it pays to keep dairy cows around the straw stack during winter, with no other food or protection. Many farmers do not know that an old orchard requires cultivation. This, no doubt, is largely owing to the fact that many of the agents who go around selling trees tell them that no special cultivation is required ; that they can grow grain or other crops among the trees while young, and seed down when older and get a crop of hay as well as apples. With the experience I have had I would recommend that no more trees be planted than can be well cared for *every* season. With the method of culture I shall outline, more *net profit* can be obtained from one acre than is usually taken from ten as generally managed. We must know something about the needs and requirements of a tree before we can cultivate intelligently. We must ever keep in mind the fact that mother earth is the greatest storehouse of plant food, and that all fertilizers we can add are only of secondary consideration. We must therefore cultivate or stir the soil often to prepare the plant food or bring it into a condition to be utilized by the tree. We must also remember that however great the supply of plant food contained in the soil, it can be of little use to the tree without a sufficient supply of moisture during the period of growth. Moisture is present in sufficient quantities in the spring, and may be conserved by oft-repeated stirring of the soil during dry weather. While the trees are young, any crop may be planted between them that will admit of early and constant cultivation. When they are old enough to produce paying crops of fruit, no other crop should be grown. Give all the space to the trees and continue to give good cultivation from early spring until the middle of August or first of September. At this time sow to rye, fall wheat or crimson clover. This early sowing of grain will give a covering to the soil that will catch and hold the snow during winter and prevent the rapid changes of freezing and thawing. The greatest benefit, however, is usually derived from the great evaporation that takes place of the surplus moisture through the medium of the growing plants. This would otherwise go to stimulate a late growth of wood in the tree that would not fully mature their fruit buds. This crop must be plowed under early in the following spring, and the same treatment as above outlined should be continued from year to year. Never on any account allow the land to remain for a single season in grain or grass. Cultivation should always reach to about the same depth, whether done with the harrow, cultivator, or plow, especially among large trees. The small fibrous or feeding roots of the tree naturally come towards the surface, or as near to the surface as the soil is undisturbed. It will be quite evident that if the soil is worked shallow for some time and then turned up deep, that countless numbers of those rootlets are destroyed. I I would therefore advocate shallow cultivation at all times in the orchard. I am pursuing this method with very satisfactory results.

Trimming. This may be done every spring as soon as hard freezing weather is past. Cut out all superfluous branches, and shorten in the new growth of young trees if growing rapidly. It is quite common to find the pruning of the bearing orchard neglected for two and three years at a time. The professional pruner comes along in the winter looking for a job, and if he has an oily tongue usually succeeds in getting it. When he invades an apple tree his first operation is to cut out the centre of the top, as he says, to let in the sunshine, but more properly speaking, to make room for himself to stand while mutilating the tree. When done it is hard to tell whether the tree or the ground contains most of the top. This sudden check to the growth of the tree is most ruinous. Where the sun shines directly into a tree top that has heretofore been shaded, and its rays atrike the larger limbs, they are sun-scalded, and borers get in their work and ruin is the result. Should the pruning of an orchard be neglected for two or three years, it will not answer to take out all in one season that should be removed. Rather take two or three years to rectify the mistake or neglect. Thin out the top enough to admit a free circulation of air, and leave enough foliage in the center of the tree to shade the large limbs. If properly trimmed every spring there will be but few large limbs to be taken out at any time, and thus the health of the tree will be preserved.

SMALL FRUIT GROWING.

By C. L. Stephens.

I may begin with the rather hackneyed statement which is found in all nurserymen's catalogues, "that any soil which will grow a good crop of potatoes will grow a good crop of berries." This is quite true, other conditions being equal.

Strawberries not only come first as to season, but when grown to perfection they are the most delicious and pleasing to the palate of any of the fruits which can be grown in this climate. The nature of the soil has an important bearing on the crop. The prevailing opinion is that a clay loam well drained, naturally or otherwise, is the most desirable for growing this fruit, and my own experience entirely bears out this opinion. Where possible, then, I would advise the selection of such soil when intending to plant strawberries. The first essential is a previous root crop; early potatoes by preference, as I am a believer in what may be called summer or early fall planting, the potato crop presupposes a rich soil in a good state of cultivation. Apply a heavy coat of well-rotted manure, from the cow stable preferred, and plow deeply in, another lighter dressing of manure to be then harrowed in along with a liberal application of hardwood ashes. If this is done about the middle of August, time can be spared to let it stand a week or ten days so that the weed seeds may sprout, and a thorough harrowing will destroy them all and put the soil in first-class condition for planting. If the season be dry it may be hard to get good plants by the 1st of September, but that is one of the things that must be provided for beforehand. Get your plants as near home as you can and have them carefully dug up and replanted with as little disturbance as possible to the roots. I might say here, that if planting largely at this season of the year, a man should grow his own plants; he can then have them when and how he likes. Most varieties are so prolific of runners that one hundred plants put out one year and encouraged to increase will easily yield from one thousand to fifteen hundred fine plants the next year. Some people grow their plants in pots for their summer planting, that is, they sink small pots filled with earth near the parent plants and cause the runners to strike root in the pots. When the pots become full of roots the plants can be shaken out, and they may be transported long distances, and be days on the way, without receiving material injury, but this tedious and expensive process is not necessary if you grow your own plants. Plant in rows from twenty-six to thirty inches apart (according as it is a small or large growing variety), and the plants from twelve to fifteen inches apart in the row. If the ground be really

dry, try to give each plant a pint of water immediately, this will keep them from wilting and start growth at once. Cultivation with the hoe or scuffler should begin in a week and be kept up every week or ten days as long as the ground is fit. Do not let any runners grow. If cold weather comes before snow, as soon as the ground is frozen, cover it and the plants lightly with clean straw or marsh hay. I find straw that has been well scratched over by the hens is in a nice condition for this purpose, and is likely to have few weed or other seeds in it. If the fall cultivation has been thorough no more will be needed until after the first crop is picked, and the straw mulching may be left on. This first crop should be enormous and the fruit of superior size and quality. After fruiting rake off mulching and cultivate same as preceding fall allowing but few runners to grow, and the next year you may have another crop nearly as good as the first. After this second crop plow or dig up immediately, and you have time to get a late crop of something else. By this method you get four crops off the ground in three years, and get your first crop of berries within ten months of planting; while for spring planting, for which the preparation of the ground would be the same, you do not get your first crop for fourteen months, and by plowing up after a second crop and putting something in for a fall crop, you get but three crops in three years, or three profits instead of four.

For varieties I prefer Michael's Early, Haverland, Sharpless and Eureka. They ripen in the order named and are the best I know, cost no more to grow than Wilson or Crescent, not perhaps quite so productive, but worth double the money most times both to grower and consumer. The consumer of strawberries too often forgets that small berries not only have more waste but are much inferior in flavor and quality to the larger kinds, and there is much greater value in a box of the latter.

Raspberries follow next in order of ripening. They will do best in rich, deep, moist, but not wet soil. Plant in the fall if possible, in ground prepared as for strawberries, in rows four feet apart, and eighteen inches in the row. Expect no crop the first season. Suckers will grow freely; in cultivating keep these all cut off but two or three to each plant, and keep those you leave down to a height of three feet. These canes will bear a crop the second year, a light one. Let a few more young canes grow the second year, always keeping up cultivation (except at fruiting time). Keep the young canes from growing too tall, to avoid the necessity of tying to stakes, and the third year a full crop should be produced, and such a plantation will last for many years. Manure alternate years with barnyard manure and hardwood ashes, applied either fall or spring. The old canes should be removed every year. As to varieties, the Turner and Cuthbert Red and Golden Queen are the only good kinds which will stand this climate without protection. I know of no good black cap or blackberry which will stand our winters.

Currants, red, white and black, and gooseberries come in pretty much together. Plant currant bushes in rows five feet apart, and about four feet in the row; gooseberries a foot farther each way. Thorough preparation and enriching of the ground should precede planting. Strong two-year plants should be procured; they will be well-grown and bear trimming before planting, which may be done in spring or fall, the latter preferred. Cultivate often, grow potatoes with them the first season; the second season there should be some fruit, the third year a big crop, which should increase from year to year as the bush increases in size. Keep all three-year-old wood cut out, and cut back the branches of currants somewhat, but not the gooseberries. Keep all superfluous young shoots cut out, if too many are left the bushes become weak; manure alternately with barnyard manure and hardwood ashes, cultivate often and attend to the pruning and the bushes will last a long time. I have raspberries, currants and gooseberries planted over ten years ago still growing vigorously, and last year's crop was as good, if not better, than any they ever yielded, and they look as if they might be good for ten years more. Cultivate, manure and prune, and the crop will be all right. Fay's Red Prolific, Red Cherry, Versailles Red, White Grape, Lee's Black and Black Champion currants are all good and the best I know of in their different classes. The "Downing" gooseberry is so much better than any other that it may be called the only one for main crop, it does not mildew and is very prolific. For fancy kinds a few plants of White-

smith, Crown Bob and Industry might be grown, also Pearl Prolific, they are all very fine and good croppers, but are said to be subject to mildew. I have grown them all for several years and have never seen mildew yet. The only enemy I have found, and that they have equally with white and red currants, is the currant worm. I find "slug shot" dusted on the bushes as often as may be required a reliable and safe means of destroying the worms. The war against the worms should be kept up late in the season if any worms appear; the late broods do much harm by taxing the strength of bushes, and preventing the formation of fruit buds for the next year.

THE POSSIBILITIES OF FRUIT CULTURE.

By Wm. H. Bunting.

Owing to the very marked change in agricultural life and prospects in this section during the past few years, largely the consequences of the depreciated value of what was once the principal money crop to the farmer, he has been forced largely to look for other means of support to enable him to provide for his family. As this section seemed favorably adapted by nature for the cultivation of the various fruits indigenous to this country, and as the prices for fruit products in the market seemed fairly satisfactory, during the last few years an enormous increase in production has taken place, with a consequent reduction in prices in the markets of the country; so much so, that the question is now being asked on every hand by those already engaged in fruit growing to any extent,—'Shall I, under present conditions and prospects, branch out any further or undertake more extensive operations?" And by those contemplating a change from their present system of grain growing and stock raising,—"Is there any money in fruit growing for me?" It is my desire, in this paper, to answer these questions as well as I can, from a practicle standpoint.

The question that confronts us in answering this very important question in the affirmative, is the possibility of over production, and the consequent lower prices in the near future. This is an era of low prices. The time has gone by, I believe forever, when the fruit grower of this section can hope to realize ten or fifteen cents per pound for his grapes and a couple of dollars for a basket of peaches. At those prices only the favored few, who never realized the value of a dollar, could dare to indulge in what the Giver designed for the many. I am glad that the progress that has been made in this country, has enabled the producer to put before the consuming thousands of our cities, fresh and wholesome fruit, at prices within the reach of all, and at prices which, with careful management and prudent forethought on the part of the producer, should give him at least a fair remuneration for his labor. What, then, are the prospects for the future? I believe that for the careful, industrious, methodical grower there is, notwithstanding probable low prices in ordinary years, a fair prospect for a comfortable livelihood for himself and his family in his chosen profession.

A successful fruit grower at the present day must be thoroughly alive to the conditions surrounding his business, and ready to avail himself of every help that can be offered by science, art, and the practice of the most successful men of his calling, and because so many are not willing to pay the price of ultimate success, it is a self-evident fact, that the chances for the earnest and painstaking student are thereby much increased. If we would be successful, we must also bring to bear in our present operations and future plans all that can be gathered from our failures in the past, as well as the practical experience of all those with whom we come in contact. How often has it been our experience when we have gone extensively into any special line of fruit, with the hope of making large profits, calculating on the basis of ratio of profit accrued on a smaller scale, that the venture has resulted in disappointment and loss, and as we have reviewed the situation we have been unable to see that it has been through any particular fault of our own, and we

have said, "Fruit growing does not pay." We do not stop to think that in taking such a step we have gone to a certain extent, outside of our legitimate business, and have become a speculator staking our expectations on the favorable issue of a single crop, which for many reasons might easily prove a failure. Unless specially favorable conditions no fruit grower can afford to depend exclusively upon one certain crop to the neglect of all others, but will be exercising only ordinary business sagacity if after studying the capabilities of his land, he plants a variety of fruits that will give promise of favorable results. The old adage, "Do not have all your eggs in one basket" is as true to-day as ever it was, and is peculiarly adapted to the fruit grower. However, having succeeded by unremitting study and care in producing a bountiful crop, many a man makes a failure when success seems to be within his grasp. He has not taken the trouble to acquaint himself with the requirements of the markets to which he has access, and consigns his fruit in a blind haphazard way to any commission man whose labels he may happen to have handy, only to find very often in the course of a week or so, that that particular market has been temporarily overstocked and his consignment has hardly paid expenses, and he is loud in his complaints as to the rascality of the public in general and his commission man in particular. Now while I believe the commission man has much to answer for, as well as the carrying companies, I really think that if some of us were to follow a shipment of ours sometimes until it reached the family of the consumer, we would have a good deal more sympathy for the commission man than we have had heretofore. It will not be within the province of this paper to take up the question of the proper or improper packing of fruit, for I believe no grower who has any love for his business, or respect for himself, will be found guilty of covering up faulty or inferior fruit with that which is fair and comely, in order to effect a favorable sale. That policy is suicidal in the extreme, and has been in the past one of the obstacles that the honest and conscientious packer has had to contend with.

To sum up, then, some of the essentials of successful fruit culture: In the first place study your business and the capabilities of your soil; secondly, ascertain the requirements of the public to which you wish to cater. Do not be discouraged by occasional failures; avoid specialities as an exclusive thing, but endeavor to be in the market at all times in the season with first-class products so that your brand may become well and favorably known by the consuming public. Seek to place your product in the market as quickly and as cheaply as possible, and in the best possible condition. In all our affairs, business and otherwise, let us deal in an honest, straight-forward manner, being determined to deserve success, and without doubt we shall obtain it, if not in a large accumulation of this world's goods, at least with the assurance of a comfortable livelihood for ourselves and families, and the satisfaction of knowing that we have to some extent contributed to the comfort and happiness of the world at large.

GOOD ROADS DEPARTMENT.

ROADS AND THE PATHMASTER.

By A. W. Campbell, C. E., Provincial Instructor in Roadmaking.

Turkey has no roads; the roads of England are among the finest in the world. These facts form an index to the social and commercial development of the two countries. Ontario has roads; but unfortunately they cannot be classed among the best in the world. Roads are not only indicative of commercial and social develepment, but are a means to this end, and as such their improvement is an object which should be sought and applauded by every good citizen.

For a considerable part of the year a large portion of our farming population is shut out from intercourse with social and business life. For the remainder of the year, owing to the rough, rutted and ill-kept condition of the roads, many find a short journey to the town a labor for themselves and their horses, and destruction to their buggies and carriages. This condition of affairs has a wider significance than the mere discomfort of such a journey and prematurely worn-out vehicles. It means to a large extent, unhealthy variations in the commercial system of this country—stagnation or unnatural activity. It means that the towns are filling up with young men and women who find life on the farm irksome; who for want of social privileges that every healthy brain demands, leave the country behind them to engage in the more stirring pursuits of the city. To prevent our farms from becoming depopulated, to give all possible encouragement to the farming community, is one of the serious problems confronting us.

There is no department of municipal affairs which demands the attention of councillors today more than road improvement, and there is no department which receives less. Councils appropriate small sums to pieces of work here and there throughout their municipalities. Unless the work happens to be an expensive bridge, very little supervision is given to the method in which it is completed—the materials, the quality of workmanship and other details. In addition to this the councils appoint pathmasters, and there their duty ends; whether the pathmaster makes good or bad use of the labor or money under his control is a matter of little moment. No attention is given to a man's fitness or unfitness for the office. The "job" is handed around, and each pathmaster generally makes use of it to do a little grading, ditching or gravelling in front of his own property. He cannot undertake any work of a substantial or durable nature as the amount of labor at his command is too limited. The result of this neglect on the part of the council—this inefficient and disconnected method of doing roadwork—has been to create an indifference and apathy on the part of the people toward roadwork.

The agitation for road reform is not an agitation against statute labor in favor of commutation or some new legislation. Neither is it an effort to cause greater expenditure on roads. Increased expenditure and the present system of supervising the work would mean little more than increased waste. Nor are all those in favor of road reform united in the belief that statute labor cannot be rendered efficient. The object of the present movement is to create interest in road improvement, to awaken people to the fact that even our best roads are not as good as they can be made; to raise the standard of what a good road ought to be; to obtain for roads, road work, and road expenditure more careful consideration from councils and all who are in any way interested in them. In some cases councils will no doubt find that the statute labor system is not applicable to their needs; others will find that 1,000 days of statute labor are as good to them as $1,000;

others will find that increased expenditure is necessary in order to obtain an ultimately economical result. The principal object of the road reform movement is to make the best possible use of the means at present employed.

To this end, councils in making appropriations for road and bridge work will take into consideration the fact that permanent and durable work is by far more economical than temporary patch work which has to be repeated every year or two; just in the same way that a good horse costing $100 is often a more profitable purchase than a poor one costing $10. Councils will in appointing pathmasters choose capable businesslike men in preference to those who are incompetent; and they will keep these pathmasters in office so that the community may profit by their experience increasing from year to year.

The post of pathmaster should be as desirable as the councillorship or any other office of the corporation. In every community there are men, respected, who have been successful in farming or in whatever business they are engaged, and who are capable of exercising a controlling influence. Such men would create enthusiasm among those engaged in roadwork and the work would be performed willingly. Men who as pathmasters, go around and get the people to do their work only by threats of fining, cannot get the statute labor done other than grudgingly and where the work is done in this spirit, little progress can be made. There are some good pathmasters who are doing all that can be expected of them with the means at their disposal. But they are very few, and it is a very discouraging thing for a section to construct a mile or a mile and a half of good road when the pathmaster and the people at both ends are negligent, content that they themselves and others more enterprising should travel in the mud.

Councils ought to have a plan of their municipality showing the road divisions. They should be thoroughly conversant with it, knowing what work should be done, how it should be done, and what work is being done. In some townships it has been found advisable for the purpose of preserving uniformity, to appoint a man whose duty it is to consult with the pathmasters, examine roads, bridges and culverts carefully, watch the working of all drains and report monthly to the council. The council should not have the municipality divided into so many road divisions that the work that can be done is merely patchwork. They should give to each pathmaster such an amount of labor and money that he can do substantial and permanent work. They should furnish him with literature indicating the principles under which the work must be carried on.

System is as much needed in regulating road expenditure as in any other business. A private enterprise conducted in so slipshod and careless a manner as is the road construction throughout Ontario to-day would speedily end in failure. This idea of "system" must not only exist in the council but in the mind of the pathmaster. When the improvement of a road is undertaken, carefully devised plans should be decided upon so that all work done from year to year will be successive steps toward one end. By neglect of system, the change and interchange of plans hastily devised on the ground renders the work of one day or year useless in view of that afterwards adopted. A pathmaster must not only make calculation for this year's work, but will have in view the work of succeeding years.

In making a road, the grading and draining should be carried on during the same season. A road which is graded only, and then subjected to the traffic of fall and spring before being drained becomes a shapeless mass by the ensuing summer, and a large amount of grading must necessarily be repeated. Under-drainage as well as surface drainage must be provided. Thorough drainage is as much needed by the roads as by the fields. All this, with the principles of grading, crowning, location, metalling, etc, the competent pathmaster must know. To make roads is a matter which any man who knows how to handle a pick and shovel can do. But to make the right kind of road in the right place and in the right way so that when completed it is the most durable, serviceable and economical that could be constructed is another matter—one which requires sound judgment, ability, study and experience. Experience, study and observation of a hundred years have taught the people of England, and of France to build good roads. We of Ontario must study their methods and those of all countries, localize and adapt them to our circumstances and needs if we are to obtain economical results.

One cause of the faulty working of the statute labour system is that all entitled to perform work are called out at one time, indiscriminately and without forethought ; all teams and no men ; all men and no teams ; all plows and scrapers, and no wagons—or *vice versa*. The experience of the pathmaster will soon teach him to follow the practice of contractors, to call out only such a number of men as he can properly direct, always providing for this number. It will be a further duty of the council to provide the pathmaster with such machinery as will bring about the best and most economical results.

The best law is that which will be best administered. If the statute labour law proves unsuccessful it is the fault of those whose duty it is to carry it into effect. On this depends the future of the roads of Ontario, and the prominent feature of road reform now is that there shall be reform in the council's attitude toward road improvement, reform in the council's manner of appointing pathmasters, the pathmaster's fitness for the office and the reduction of roadwork to a systematic, methodical basis.

THE IMPROVEMENT OF OUR COUNTRY ROADS.

By G. B. Armstrong, Teeswater.

I think you will all agree with me that our country roads need improving, but how to accomplish this is a task which I fear will require a more facile pen than mine to describe. However, I hope to bring forward a few thoughts which I trust will be of service in promoting discussion, and thereby creating a more lively interest in the art of road-making than there has heretofore been. It shall be my aim in this short paper to improve the roads and the system of making them, rather than to advocate any new and radical mode of road reform ; but one thing of which I am convinced is, that we will have good roads just as soon as there is a national sentiment created in the minds of the people in favor of them. People everywhere are anxious for increased railroad accommodation, but we should see to it that the roads leading to those lines of railroad are kept in a proper and safe condition ; and I claim that good roads, whether rail or country, will do as much to lift a nation into prosperity and happiness as any other work to which she could direct her energies. Good roads are "a thing of beauty and a joy forever." They are not only desirable to improve the appearance of our farms and the country in general, and to give pleasure and enjoyment to the travelling community, but also a necessity to enhance the value of our property, to lessen the cost of marketing our products and thus increase our profits. Every Canadian who has visited Great Britain is highly delighted with the excellent condition in which he found the highways there ; it is remarkable to a Canadian's eye because of the large amount of rainfall. On the other hand, our Old Country cousins on arrival here, are somewhat disgusted with the Queen's highway on this side of the deep. The principal reason for this is that we do our road-making by statute labor. We have a system which leaves it optional for Township councils to commute the labor, which would, in my estimation, be an improvement ; but however desirable that would be, the fact remains that very few municipalities have taken advantage of it ; therefore, as statute labor is here to stay for some time to come at least, let us by all means in our power try to improve it.

There exsists a great difference of opinion among the people as to the proper width of the road bed, but I consider it better to be safe than sorry. I would suggest therefore, that it be wide enough for any person driving a spirited horse to safely encounter a traction engine or even an ordinary bicycle, not saying anything of the electric railway that we hear so much talk about. Municipal councils should inaugurate a system of tile draining to obviate the necessity of carrying off the water by deep ditches, which are not only dangerous but unsightly ; and just here I may say that while crowning is necessary still it should not be overdone, and I consider that a rise of one foot on a thirty-foot roadway is quite sufficient. In appointing men for pathmasters they should, if possible,

be only such as have a knowledge of road-making; and when that class of men are found they should be re-appointed from year to year. This will not only be helpful to make better roads, but will also have a tendency to create a more uniform road. In some districts good roads have no doubt been built and maintained under the present system, but in a vast number of cases have too often been undone by a change of pathmasters. One of the defects of the present system is the want of uniformity in construction. This could in a great measure be remedied by making the "beats" larger over which pathmasters have charge. They should also enact rules for pathmasters' guidance and assistance, as they are unable or unwilling to say to their nearest neighbors (which in itself is demoralizing) how much gravel should be drawn in one load. Then farmers with a team of colts or lame horses for an excuse would not be permitted to trot off with a quarter of a yard of material, sometimes in a box without any end boards, to be scattered along the road, very little reaching the place intended for improvement. The men that are generally appointed pathmasters are those who have the least number of days roadwork to perform; but while this may or may not be right, councils should make it imperative on pathmasters to perform their full amount of roadwork.

Pathmasters after being appointed should lay plans for the improvement of the road over which they have charge, and should abstain as much as possible from undoing what their predecessors have done. In ordering out the men, care should be taken not to have too many men for the number of teams, or too many teams for the number of men, as it frequently happens that valuable time is lost in this way. If gravelling is being done, a sufficient number of men should be on the road to spread the material, which should not be less than eight feet in width. These men should come provided not only with shovels but also with a garden rake and a stone hammer, as these are quite necessary tools for good roadmaking. Pathmasters should bear in mind that they are the representatives of the Queen, and having been thus honored should strive to have the road as presentable as possible when she appears on the scene. Farmers and others while working for Her Majesty should abstain from celebrating her birthday on that occasion, but perform their work faithfully, ever mindful of the fact that it is they themselves that are profiting by having a good road. They should not make the roadside the dumping place for all rubbish of the farm, but should clean up and level opposite their own property.

Another benefit undoubtedly is the use of wide tires, as they have a tendency to roll the road rather than cut into it. In conclusion I wish to emphasize the fact that good roads are admitted by all to be a boon to mankind, and therefore our motto should be,—"To ever try and improve our country roads."

THE STATUTE LABOR SYSTEM.

By John McArton.

It is only repeating the echo of public opinion to say that the plan of making and repairing roads by statute labor is out of date. It is not the intention of this paper to ridicule a system that has served a good purpose and accomplished much. At the time the system was introduced a more suitable arrangement would have been hard to find, while a proof of its usefulness is to be had in its existence till the present day. Our fathers did the best they could. They cleared the track from the solid forest; in many places they crosslaid logs with corduroy, built bridges, dug ditches, etc. They made roads which served their needs fairly well. All this was done by that now much despised system of statute labor, leaving for us if not first-class roads, at least a very good start to improve upon, with no accompanying debt. However, all things run their course, and statute labor is no exception. It is quite time the venerable relic was laid away along with the flail, the ox-yoke and the potash-kettle, the friends of its youth, which it has

long outlived. Before superannuating the old method we must find a substitute. It is one thing to do away with statute labor; to replace it with something better is another. If we want better roads, if we want to haul heavier loads, if we want to drive faster, if we want to save our horses, save our rigs, save our time,—if we want to keep pace with the improvements of the day, let us use the same diligence and enterprise our fathers used, and in proportion to our opportunities, and then the condition of our roads will be assured.

Suppose we abolish statute labor, what then? Certainly roads won't look after themselves. Before going farther let us hear what "Macaulay's History of England" says about the roads in that country at the time when a system of improvement was introduced there. The history says: "When Prince George of Denmark visited the stately mansion of Petworth in wet weather, he was six hours in going nine miles, and it was necessary that a body of sturdy hinds should be on each side of his carriage to prop it. . . . . One chief cause of the badness of the roads seems to have been the defective state of the law. Every parish was bound to repair the highways which passed through it. The peasantry were forced to give their gratuitous labor six days in the year. If this was not sufficient, hired labor was employed and the expense was met by a parochial rate. . . . . A change was at length effected, but not without difficulty, for unjust and absurd taxation to which men are accustomed is often borne far more willingly than the most reasonable impost which is new. . . . . By slow degrees reason triumphed over prejudice, and our island is now crossed in every direction by nearly thirty thousand miles of turnpike road." Macaulay here points out the inadequacy of a system of road work similar to our statute labor. He also shows the difficulty usually found when a new thing is introduced. The following extract from Bryce's "American Comwealth" may also throw some light on the subject: "That the roads of America are proverbially ill built and ill-kept is due partly to the climate with its alternations of severe frosts, occasional torrential rains and long drouths; partly to the hasty habit of the people, who are too busy with other things and too eager to use their capital in private enterprise to spend freely on highways." Bryce here points to the necessity of spending freely before good roads can be made. If statute labor is abolished it is clear that large sums of money must be forthcoming to carry out any new plan. To obtain this, people must be willing to allow themselves to be taxed. By commuting the statute labor at $1 per day, and adding thereto the amounts usually spent in special grants, a fair sum could be had in most municipalities without making any unreasonable increase in the taxation; yet it would be necessary in many cases to increase these amounts largely to put a good system in operation. It is to be feared that the majority of ratepayers will not take kindly to a fresh imposition of taxation, even if the money is to be spent in that greatest of conveniences, "good roads." That men should be averse to taxation for this purpose seems all the more strange when we see the alacrity with which they respond to the solicitations of a few railway boomsters, often voting tens of thousands of dollars by way of bonuses, and plunging their municipalities into permanent debt, while their own concession lines are a scandal to behold. However, from these railway promoters we can learn a lesson. Thorough, organized agitation is the secret of thier success. Agitation is the soul of progress, and if by this means the ratepayers can be induced to provide the funds one great step will be made towards "good roads." When the people are ready to provide the funds another very needful thing remains to be found and that is a managing body with sufficient latitude given it to enable it to carry out a set of plans which may require years of systematic work. It may be asked, "Are municipal councils not capable of handling the matter?" According to the opinions of the best authorities it appears they are not. The Municipal Act empowers the council of every township to pass by-laws to abolish statute labor and for collecting money in lieu thereof. If councils are equal to the occasion, why do we not have the change? Because their hands are tied: Yearly elections breed timidity. We will refer again to that admirable work, Bryce's "American Commonwealth." In speaking of men who seek re-election for short periods the author says: "Nothing is more remarkable about these men than their timidity. No one seems to have an opinion of his own. . . . . In questions of public policy

he looks to see how the cat jumps and is ready to vote for anything the people, or any active section of the people, cry out for; though of course he may be secretly unfriendly and may therefore slyly try to spoil the measure." Of course in writing this Bryce refers to American legislators, yet any person who has studied our own institutions must admit that his criticism applies to them with much force. In a paper read at the second annual meeting of the Good Roads Association by Mr. J. C. Judd, one of the executive committee of the Association, he expresses his opinion of the municipal corporations in the following terms: "Personal and political motives prompt them to be passive." In the discussion following Mr. Judd's paper we get quite a confession from Mr. J. H. Wooley, another member of the executive, who is also a municipal man. He is reported as saying: "In stating what he did Mr. Judd's pulse beat with mine. The great trouble to-day is that the man who would 'hold the fort' and remain in the council must be more or less a man of policy. It is a bad state of affairs. I have been in councils when petitions pro and con came before them, and while I knew the con deserved support I felt also that it was 'Good-bye, John,' if I did not vote the other way." Truly there are others besides the Duke of Wellington who find it desirable to take shelter behind the lines of "Torres Vedras." One more quotation from the report of the Good Roads Association, this time from a veteran councillor, Mr. A. F. Wood, Madoc, who served in the county council of Hastings for about twenty years, ten years of which he was warden. He gives his opinion thus: "He would have more than the average backbone of a legislator who would dare to initiate legislation in the direction of doing away with statute labor and by systematizing regular expenditures by direct tax upon the people. And yet to my mind this is one of the things that must be done before much progress can be made." It is evident that something must be done to put a backbone in our councillors to enable them to cope with a sound system of road improvement. An excellent paper on Municipal Economy was read by Mr. K. W. McKay at the Central Farmers' Institute last winter. In the paper and in the discussion following a feeling was strongly expressed that it would be a great advantage to lengthen the term of office of councillors to at least three years. The same idea was suggested on this platform by the retiring Mayor of Carleton Place, Mr. Cram, when delivering his valedictory address after the late nomination. Now, care of the highway is the most important trust of councils, and any change in their organization which would enable them to discharge this trust faithfully would be a movement in the right direction. We need not expect men who have only a twelve months' lease of office to display much anxiety about taking up work which would require years to accomplish. Who ever heard of a councillor having the audacity to propose what he would do several years hence? The very hint of such intention would send him where he would have a chance to use his enterprise for his own benefit. We want good roads; we want good men to take charge of them. To give good men a chance to make good roads they must have more latitude given them than is at present provided by our statutes.

THE IMPORTANCE OF GOOD ROADS AND HOW TO ATTAIN AND MAINTAIN.

By W. M. Robson, Lindsay, Ont.

Roads are the arteries of a nation's inland commerce. Their condition is a feature or index of a country's civilization, a proof of its enterprise, social intercourse and trading capacity; a landed reservation with an immense capital invested and debited to them, built to facilitate travel and transit, yielding the best returns for outlay and labor when kept in the highest state of efficiency; and so vast are the benefits, so important are the conditions to us, individually and collectively, as to appeal for our interest and aid in the good roads movement. When we consider the illimitable field of operation having a universality of application,—such extent may provoke a passing thought in some one,

that it is assuming or presuming on my part in attempting this gigantic and inexhaustable subject on which so much has been written and discussed of late. Such a feeling would be somewhat embarrasing to me had I not the assurance (difficult as it may appear from a monetary and engineering point to cope with), that it possesses the justifying properties of both patriotism and philanthropy,—first, by seeking to improve our country, and next, by benefiting humanity,—thus making it worthy of the humblest attempt to better existing conditions, which should find acceptance from any source. For it is said, that he who sets forces in motion that tend to produce good effect, is a public benefactor. If testimony were necessary to sustain my position I might submit such by adding that for nearly twenty-five years I have cultivated the soil under varied conditions and circumstances, and utilized the roads by a daily delivery wagon, giving me an opportunity of observing the needs and necessities, also of noting public expression on the three W's,—wants, wishes, and whims; — all culminating in a settled conviction, that to have good roads there are three absolute conditions imperative, namely: first, good drainage (longitudinal and lateral); second, roads properly and scientifically constructed, metalled or gravelled; third, a careful supervision and practical (or if you like remedial) applications. Now these conditions carried out will guarantee good roads, but this standard can be modified according to local requirements and municipal finances which must govern and guide. In this paper I would especially desire that my ideas may be practicable and applicable to this country, as I do not think it necessary for me to give the ancient history of roadmaking by referring to the time of the Roman Conquest, or describing how the Romans constructed fine military roads in the south, east, and north of England, or the thousands of miles made for military purposes leading from the city of Rome during the regime of Julius Ceasar. Roads do not necessarily improve with time (like good wine); they need constant attention whether new or old. Good roads have been desired and discussed ever since the first settler blazed the first line of highway through the forest. But not until February 9th, 1894, did the Good Roads Association assume a definite form by holding its first provincial convention in Toronto, when representative men from all over the Province willingly took part in the extension of a work so important to the community, and since that time it has had advocates at nearly all farmers' conventions or meetings.

First, the importance of good roads. The yearly loss sustained by bad roads cannot be computed. One statistician says it is probably not much short of $1,000,000 annually in the extra haulage tax imposed by bad roads on the co-operative dairy industry alone, which furnishes so large a portion as $14,000,000 worth of our exports, yearly. I might give you numerous other calculations of losses chargeable to bad roads, and also of gains that would accrue from good roads. But suffice to say every reduction of cost on this line is an addition of profits to the interested parties. Let us apply this to our own individual experience. Such losses as we can bear testimony to, of time and material in its varied forms, horse, harness, and vehicles, together with our comfort, pleasure and convenience; and not only are these sacrificed, but frequently prolonged sickness is entailed from long exposure, which in time, ends in death. I might also add the disadvantages and losses caused by delays in marketing produce and a hundred other disappointments and troubles that are unfortunately known too well to all, and which only swell the enormity of losses and enhance the unanimous verdict as to the importance of good roads, morally, socially, and financially.

Next, how to attain them. "Tis a consumation devoutly to be wished," and I say this with all seriousness, and endeavor to describe the *modus operandi*, or the method that would be most likely to attain this end. Good drainage is the first and most important consideration in their construction. Standing water is a standing menace to roads, old and new, improved or unimproved. Get water off and keep it off, ought to be the road-maker's watchword. All soils of a retentive or tenacious nature hold water. The exceptions are those of a porous, sandy, or gravely formation. The majority of roads then need drainage in some form. It is a serious mistake to allow water to remain in ruts, softening and saturating the road during the wet season, until traffic is stopped, and time allowed for the water to evaporate and the road to dry, when a little attention

(cutting the slight barrier that obstructed the water from finding its way into the ditch, or a little raking or filling in) would have rendered the road passable during the season. This would have been in effect the proverbial "stitch in time" with its nine hundred per cent. to its credit. The exception to drainage is only admissible on roads of a rocky formation or on those situated on high stony table-lands, or through gravelly districts; such may be exempt, except in depressions which must be provided for. But when conditions are directly opposite in character, such as wet stiff clay, or damp, spongy, springy ground, draining is then absolutely indispensable. The worst of such places would require two side drains running parallel with the road just where the gravel or metal extends on each side, at a depth of three feet, or the depth attainable. The best and cheapest drain to put in would be good well-burnt three-inch tiles. If tile is not procurable, then good flat field stone made to form a pipe, such drains to connect with side ditches by laterals opening at convenient distances. However, on most wet roads, I think one good drain well constructed in the middle of the road would be sufficient. Preparatory to drainage it would be well to have all the advantages that a good uniform elevation gives, or your road will admit of. This accomplished, we will proceed to prepare the road bed, by excavating to the depth of from ten to twelve inches. This excavation must be uniform and of the same curve as the road when finished. The width must necessarily vary in accordance with the amount of traffic or travel. Leading highways near cities or towns require the greatest consideration in this respect. Rural roads must be subject to reason and judgment. As to their requirements, I should propose eight feet as a minimun width and sixteen feet the maximum width for excavations; the travelled portions of our leading roads from twenty to twenty-five feet wide. These provisions made, we will commence on the Telford system to lay the basis or foundation that ought to be firm and unyielding to carry the superstructure and weight of traffic, by placing good sized flat stones with an average thickness of from three to five inches in position in the excavation, like a sub-pavement, filling all interstices with suitable pieces. This ought to be rolled with a five or ten ton roller, if available, which would give this foundation a firm and uniform bearing. After this cover to the depth of about four inches with rough broken stone, and roll again. Then add a coat of broken stone that will pass through an inch and a half or a two inch ring. The last layer will require a little binding material of fine gravel or coarse sand to make a smooth surface, the whole finishing with a gradual convexed grade of about two inches in eight feet, giving the whole a beautiful appearance. A metaled road of this character would cost upwards of $2,000 per mile; gravel about $1,000, as estimated by civil engineers. Just here, permit a word respecting grades. Avoid the narrow mounds sometimes made of five feet wide or so, with a convexity of a semi-circle almost,—such a grade is dangerous both in winter and summer. In the winter, the snow blows off, and the hind bob may at any time dispute the position of the front bob, and the impetus given by the rapid gravitation frequently terminates by overturning the load—of this I have had practical demonstration —and in summer there is danger in turning out to pass on such roads, for your vehicle will describe an angle of about forty-five degrees, when you, and if you should have a fair companion, will have to assume an indecorous position in order to retain the balance of power.

After describing the method of making a good road I will endeavor next to maintain it so. Then, whenever or wherever our road is good keep it good by a vigilant and continuous supervision; this can only be done by employing a road overseer or section man for every three or four miles, provided with pick, shovel, rake and scraper for at least eight months in the year (in our climate). For if roads and machinery are to last long, and render good service, both must be well cared for. Just here I fear I am introducing a financial problem that would appear difficult to find an acceptable solution, but think reason and practical economy will solve this doubt; if not, I am sure the Good Roads Association can. Before proceeding we must not count without our host, for reforms of this nature would require authority and aid,—Government, County, Municipal—with the enactment of by-laws fully describing rules, regulations and obligatory duties, prepared with great care by some practical man or men, and special copies pertaining

to the section men's work, given to them with strict injunctions that such be faithfully carried out as far as possible. All preliminaries settled, we next provide proper repairing material, and have such placed at convenient points on the roadside. A few suggestions will now be in order as follows: Never allow gutters, ditches, drains or outlets of any kind to close up with dirt or debris. Never allow a quantity of mud to lie on the surface; mud is unsightly and an obstacle to traffic, a worn out material that ought to be relegated to the land. Never allow the centre or crown of your road to be lower than the sides, but have a gentle grade both ways so that the water will freely gravitate to the gutters. Never repair a depression without first clearing off the mud and picking up the old surface in order to secure a bond, then have it made firm and smooth by rolling. Respecting regular employment of section men: When the roads did not require their attention they might cut down noxious weeds, break stones, level unsightly mounds, and do many other jobs of service to the community.

Just a few words about broad tires. It is believed that broad tires are a profitable investment for those engaged in hauling heavy loads; that they can draw from one-quarter to one-half greater loads under certain conditions; that they are road makers and not road destroyers; that they act as rollers tending to make the roads better; that the French market wagons have tires from three to ten inches in width; that most of the European countries have laws regulating the width of tires. The State of New Jersey has a law providing for their compulsory adoption. Pennsylvania awards a rebate of one-fourth the highway tax to parties who use tires not less than four inches in width. Michigan gives a rebate of one-half the road tax to teamsters using broad tires, etc. The broad tire is an important factor in maintaining good roads.

I have endeavored to present to you in a brief outline only the importance of good roads, how to attain and maintain, and in conclusion give you the advice of the noble Roman:

"To all this *boon* is open,
But only they can take it
Who says with Roman courage,
I'll find a *way* or *make* it."

DOMESTIC ECONOMY DEPARTMENT.

DEMONSTRATION LECTURE ON THE ECONOMICAL COOKERY OF MEATS.

Given Before the Farmers' Institute at Guelph by Miss Bessie Livingston, Supt. Ottawa School of Cookery.

In speaking of the economical cookery of meats, we may treat the subject from two standpoints. First, in cooking the coarse, tough, cheaper parts of meat in such a way as to render them tender, nutritious and tasteful. Secondly, in cooking the more expensive cuts so as to retain and concentrate the juices and flavors.

To-night I shall illustrate and explain my subject in three different ways. First, in soup-making, where we want all the nutriment in the broth. Second, in making a stew, where we wish part of the juice in the meat and part in the gravy; and third, in broiling, where all the juice should be retained in the meat, and in doing so I shall endeavor to demonstrate much that relates to the scientific and economical cookery of meats.

Soup-making. The materials we use in making soup are the cheaper bony, tough parts of beef, veal and mutton, such as the shin, shank and neck pieces. Fresh meat should be used. I have here a couple of pounds of shank of beef in which the proportion of meat and bone are about equal. If we examine the lean part of the meat we see that it is made up of little sacks or tubes, composed of stringy white tissue which holds the

rich juices of the meat. In these juices we find the valuable and nutritious albumen or flesh-forming element of our food. There is also some fat to be seen—we know that good beef is always marbled with fat, and in the bones, sinews and gristly portion of the meat we get the gelatine. In the blood and juices are found the mineral salts. Besides these we have the flavoring properties, which are important food adjuncts. In order to obtain the largest possible amount of these nutritive qualities from this tough, stringy piece of meat, I shall make soup of it. First rub the meat with a cloth wrung out of cold water, then remove the coarse flavored outer skin, cut the meat in fine pieces; in so doing we open the little sacks and let the juices out. The bones have been finely broken. I shall now put it in cold water to draw out the juice and let it stand for an hour to dissolve the albumen. In these two glasses I have put a tablespoonful of minced meat, putting cold water in one, and in it we see that the liquid is highly colored. In the other I put boiling water, the liquid is comparatively clear, showing that the hot water keeps in the juice. It is the albumen that forms an impervious coating on the meat. We notice the effect of different degrees of heat on the typical albuminoid, white of egg; it is dissolved in cold water and becomes firm and white in hot water. Boiling water renders it tough and indigestible. The same principle applies to the cooking of meat albumen. After the meat and bones have stood in cold water one hour we put them in a steam-tight kettle and place it on a cool part of the range to slowly cook and soften the tissues, which are not so easily dissolved as the albumen. We cook it slowly for four or five hours, then strain through a coarse sieve or colander and set it to cool. The fat will rise to the top and can be removed and clarified for use in cooking. This is the simple method of making soup stock or broth. Allow one teaspoonful of salt to the quart. In this broth we have only the flavoring of the meat. If we desired additional flavoring, these are best supplied by the vegetables and herbs of the kitchen garden which I should add in the proportion of one tablespoonful each of carrot, turnip, onion and celery (diced for convenience in measuring) to the quart of liquid, also a teaspoonful of mixed herbs—a mixture of savory, thyme and marjoram—these latter are so valuable to the housekeeper, in the preparation of many soups and sauces, that a corner in every garden should be allotted to the growing of sweet herbs. The vegetables and herbs are added to the soup one hour before it is removed from the stove. I might here speak of the value of odds and ends in soup-making. The remains of cooked meats, fowl or vegetables may be used to advantage, in fact I think we prefer a soup to which has been added the bones of roast or broiled meat, as it improves the flavor. The stock I have in this jar was made of fresh meat and bones and the frame of a roast chicken, and from this stock I shall make a simple vegetable soup. To the pint of stock and one cup of strained tomato juice, one scant tablespoonful of flour and beef fat or butter. In the same way I might have used a cup of any cooked vegetable, green peas, lima beans, potatoes or celery. The stock is heating and the best way to add the thickening is to melt the fat, add the flour and cook it three or four minutes, then add the tomato juice. I shall now add this to the stock which is quite hot, and our soup is ready to serve. Crisped crackers or croutons of dry toasted bread would be a pleasant addition to the soup, and might also be considered a scientific combination, for starchy foods should be served with meats or other nitrogenous foods, and very frequently the natural sense of taste suggests the correct combinations. Stock may be kept for several days in cold weather, and the great variety of vegetables which may be added to light animal broths admits of frequent change in the serving of soups. We Canadians, it would seem, have yet to learn the art of soup-making and also of soup-eating. In many European countries soup is a national dish and is served daily in the home of the prince and peasant, and as a matter of healthfulness and economy it would be wise to follow their example.

Making a Stew. My second method of illustrating the economical cookery of meats will be in making a stew, and for this purpose we may use the cheaper cuts of meat, but would prefer less tough pieces than we use in soup-making. We could use a piece from the middle cut of the shin, the flank, brisket, neck or shoulder pieces. Now in making soup we want the nutriment in the broth, in stews we want most of the nutriment in the meat, though we like the sauce or gravy to be enriched with part of it. So our

method of treatment is different. First we cut the meat in pieces convenient for serving, then dredge it with pepper, salt and flour, and sear it on the outside in the frypan in some marrow fat or butter. We have two reasons for doing this, the searing gives it a higher flavor, and also forms a coating on the outside and keeps the juices in. A similar effect would be obtained by pouring boiling water over it. I will put the meat in the stewpan and cover it with boiling water. In a stew we like the flavor of vegetables, I shall fry a slice or two of onion, carrot and turnip, and add to the stewpan. Set it on the cool part of the stove to slowly cook for two or three hours, or until the meat is tender. I may speak of the importance of flavoring. We might say it comes before cooking, because many of our foods might be eaten raw, but we prefer to cook them in order to develop a different flavor and tempt the appetite, for though we may understand much of the scientific theory of cookery and dietaries, if we cannot tickle the palate or arouse a pleasant stimulation of the sense of taste, our labor is almost in vain, because palatability and digestibility go hand in hand, and the careful preparation and cooking of a cheaper cut of meat would result in a much more digestible and nutritive product than the careless cooking of a porterhouse steak.

Broiling. My third method of cooking meat will be illustrated in cooking a chop. This is a plump loin chop about an inch thick ; the fibre is tender, there is little bone or gristle. In cooking this we wish to retain all the juice in the meat. I shall parboil this, a bed of bright red coals would be the best cooking medium. First heat the pan to a blue heat, sear the chop on one side until well browned, then turn over and sear the other side. This process will take two minutes. Now move the pan from the great heat and cook for six or eight minutes more. Turn twice in cooking. Were great heat to be continued, this tender chop would be made hard and tough. Season with salt and pepper and serve immediately.

Roasting or baking meat is similar to broiling. Sear the cut surface on a red hot pan, and then place in a moderate oven to cook. The time allowed for roasting meat depends upon the thickness of the joint ; about fifteen or twenty minutes to the inch. Boiling meat is also similar to broiling or roasting. Plunge the joint into boiling water, let it boil for two or three minutes, then place the kettle on the cool part of the range where the water may be kept below the boiling point, until cooked.

DOMESTIC SCIENCE IN THE PUBLIC SCHOOLS.

Abridged by Miss Bessie Livingston, from "The New England Kitchen Magazine."

As New England has long been famous for her culinary skill and Connecticut renowned for her educational facilities, it would seem as if we ought to find these two arts well united in the Nutmeg State. While the science of cookery has been taught in some parts of the state for the past five years, yet the number of schools is small, far too small for so important a subject, and the scope of work more limited than it should be. At present the only towns in which such schools are established are New Haven, New Britain, Willimantic, South Manchester and Stamford. The one at South Manchester is a Practice School, under charge of the New Britain State Normal School. The school at New Haven has made rapid progress in the work and gives evidence of future advancement very satisfactory to those in charge. Miss Ella A. Pierce, a graduate of the Boston Cooking School, is at the head of this school, and has shown that she is well fitted for the duties of her position. The school at New Britain is a department of the State Normal School in that town, and Mis Carrie Conley, who also has charge of the Practice School at South Manchester, between the two, finds her time is well occupied. Fortunately she is able to manage both, so neither suffers by her double duties. During the first two years of the existence of the school at New Britain, boys as well as girls were initiated into the mysteries of the saucepan and the broiler. This has been discontinued, and at present, while the girls are taking their cooking lessons the boys are in the workshop, thoroughly enjoying their work with saw and plane at the carpenter's bench.

Very effective work is being done in the Stamford schools. Miss Dorothy Johnson, of Fordham, N.Y., is the teacher. At present the work consists of one lesson per week for twenty weeks, given to forty-five girls divided into three divisions. These girls are taken from the high school and grades nine and eight of the grammar schools. Superintendent Willard says, "It is, in my judgment, so far as is possible with its limited resources, doing more to bring present happiness into the homes of Stamford, and to insure against 'domestic infelicities' in the future, than any other secular institution within or borders. It is a good work well begun; it should be carried forward and developed equally with that of other departments."

Cookery has been taught irregularly in the State Normal and Model Schools at Willimantic. In 1890 Miss Catherine Coolidge, now instructor at the Drexel Institute in Philadelphia, opened the department at Willimantic, and spent two years there, raising the school to a high standard of excellence. On account of lack of funds the school was closed the following year. A year later Miss Nancy Mather re-opened the the school and carried on the work successfully for a year. Miss Mather last September took a year's leave of absence and entered Pratt Institute, in Brooklyn, N.Y., and is now studying in the department of domestic science. While the schools are fairly well equipped, yet there are many things which could be added to facilitate the work, and thus make it easier for the teacher and more instructive for the scholar. The domestic science course in the Connecticut schools consists chiefly of the study of cooking, but very little individual work. This is to be regretted, for it prevents, in a degree, a thorough and complete understanding and mastery of the subject. The limited time given to the course, prevents more than a hasty glance at the allied subjects of economics, hygiene, home sanitation and sewing. But interest in the advantages and excellencies of this branch of education is being awakened rapidly and cannot fail to bear fruit. The educational leaders of Connecticut are enthusiastic on the subject of manual training and domestic science, and will, in time, so extend the interest in this subject that no town of any size or importance will be without at least one such school within its borders.

THE FARM KITCHEN.

By Mary E. Millar, Formerly Superintendent at the Montreal School of Cookery, now at the Y. W. C. A., Ottawa.

Healthy and happy homes are said to be the surest guarantee of the moral progress of a nation, and those homes in which the surroundings are always cheerful and pleasant, the food always well prepared and healthful, will furnish but few outcasts or criminals. How important, then, that the foundation of the home—the kitchen—where the "Home Queen" spends a large share of her time providing for the wants of her family, should be in every way suited to the purpose for which it was intended. The most important qualifications are healthful surroundings, convenient arrangement and suitable furnishings. In choosing the site for a house see that there is a possibility of good drainage, a first-class supply of pure water, and a "fine spot for a garden" near the kitchen. This latter most useful adjunct is too often neglected. A farmer will probably take you out to see his stock or a crop of mammoth corn, but the garden! Where is it? The "women-folk" may have a few herbs and greens in a stony corner of the back yard, but this can never take the place of a liberal supply of fresh vegetables, crisp greens and luscious small fruits, which also tend to interest the young people on the farm.

"Sanitation" means "applied common sense," and saves needless waste of life and untold suffering Statistics show that, aside from all sentiment, it is more economical to spend money on proper systems of ventilation and drainage than to meet the expenses of a sickness or possibly death which may result from the neglect of these. Let the surrounding air be pure and uncontaminated by rubbish, swill barrels or open cesspools. The practice of emptying dirty or greasy water on the ground near the kitchen is to be avoided.

The cellar air is drawn from the locality, and when impure air finds its way into the cellar it ascends through all the upper part of the house as it becomes warm, for heated air inevitably rises. For the same reason the practice of storing fruit and vegetables in the house cellar is to be avoided, as decaying vegetable matter very quickly poisons the atmosphere. If the barn does not contain a root cellar, one may be built outside at moderate cost from such plans as are often published in the agricultural papers. A clean dry cellar is best secured by using cement plaster for both floors and walls, and the best ornamentation is old-fashioned whitewash. On hot days close the cellar windows early in the morning and open them late to let the cool night air circulate freely. Consumption, diphtheria and a host of kindred diseases are helped along their dreadful course by vitiated air, and even common colds are more prevalent where pure air is lacking. If a house is old and not provided with special ventilating flues or even with the chimneys built from cellar to roof, other means must be found for the entrance of pure and the exit of foul air. One plan is to raise the window two inches and fill the space completely with a block of wood. The current of cold air entering between the upper and lower sash will then be directed towards the ceiling and mixed with the heated air before being used. Another contrivance for providing a constant change of air in a kitchen consists of a double flue having the inner pipe extending lower than the outer one. Fresh air will enter through the former, and after circulating through the room finds its way out by the highest outlet. The currents of air entering may of course be regulated by slides or shut off at will.

The next item of importance in our kitchen will be the entrance and outlet of a good water supply. One country home of my acquaintance has a plentiful supply of both hard and soft water managed in this way: the hard water is pumped by a windmill from a well to a barrel in the garret provided with an overflow pipe to insure a constant fresh supply. This is then distributed through the house as are city waterworks, for kitchen use and the flushing of sinks, etc. The soft water is stored also in the garret in a cistern six by four feet and three feet deep, made of three-inch boards, built log-cabin fashion (one on top of the other, flat sides together), with a heavy binding twine between each two and jointed at the corners alternately. This makes a strong cistern, and if lined with galvanized iron it is much more easily cleaned out. Pipes convey this water to the kitchen and to a hot water tank in the bath room. The sinks are of white earthenware, each supplied with a trap in the waste pipe to prevent foul odors from the drains escaping in the house. Frequent flushings with a solution of potash prevent an accumulation of grease in the pipes. The plumbing is thoroughly done—no pipes hidden in the woodwork with the possibility of a leak remaining unnoticed until it has poisoned the air and perhaps some of the people. The pipes inside the house are of iron which is not liable to crack with the settling of the house as earthen pipes might. Outside the house the drains are of salt-glazed, vitrified clay pipes with cemented joints, and provision is also made for the ventilation of the drains.

For the building itself, it is economical to spend money in securing good plans from a first-class architect, for one who has made a life study of any special subject must have a better knowledge of that subject than one who has not. Whatever else, have the kitchen bright and cheerful by a plentiful supply of sunshine with provision for shading the windows in summer, and also a deliverance from the fly pest by complete door and window screens. Have smooth-finished walls so that they will not harbor dust or odors, but avoid bare white, which is trying and often seriously injurious to eyes and brain and, according to high authorities, has a detrimental effect on health and spirits. It is better to have a small kitchen conveniently close to the dining-room, built and furnished as a kitchen with every convenience within your means, and use it only for the purpose for which it was made. Dr. Mills once said, "People build themselves out of house and home by erecting a large house which they cannot afford to furnish, and then live in the kitchen constantly among the odors of cooking food." A good storeroom or pantry is a necessity and should be provided with an abundance of shelves for provisions, drawers for linen, and a supply of fresh dish towels. A cupboard with one side opening into the dining-room saves steps, as the dishes and food can be put in on the kitchen side and taken out on the other. This may also have drawers opening both ways for table cutlery and other

utensils. A dumb waiter which easily swings into the cellar will save carrying food up and down the steps. Or a home-made refrigerator will often answer the same purpose. Place the kitchen sink with its hot and cold water taps in the most convenient place possible, and beside it a corrugated draining board or a tin-covered table slightly inclined. This will please the dishwasher. Under this table may be a small closet furnished with a row of hooks on which to hang kettles. Over this table is the place for a bracket lamp. A cabinet either moveable or stationery in the pantry is a cook's treasure. One of very good design has the appearance of an ordinary high-backed sideboard, with a row of small drawers on the back above the kneading-board,—each one labeled for spices, currants, sugar or other groceries,—and a shelf for baking-pans, mixing-bowls and other utensils. Beneath the board are swinging bins for flour and meal. An extension at either end can be raised when desirable like the leaf of a table. A modern housekeeper considers her kitchen laboratory invaluable. In it she keeps her solution of potash for cleansing sinks and washbowls, ammonia for laundry use, chloride of lime for bleaching purposes, muriatic acid to be very cautiously used in removing rust, oxalic acid for ink stains which defy a milk treatment, and various harmless lotions and potions for the ordinary ills and accidents which arise in everyday life and work. A corner must also be found for her kitchen literature,—cookery books, account books, memorandum, pencil, twine and paper. A high office stool will be found useful on many occasions, a low chair or small rocker for the few moments of rest which often must be snatched in the kitchen, and a pad or cushion of stout denim will rest the tired and aching feet.

In this inventive age we have a choice of kitchen machinery—as our brothers have of farm machinery—and labor-saving devices, which, with a little patience and ordinary skill in the management, will do their work not only more quickly, but also in better style than the old methods. For instance, food often tastes of the wooden chopping tray and hints at the aching arms of the cook, while a neat little meat machine would do the work more easily and quickly. This same machine pulverizes dried bread crumbs and grinds horseradish beautifully. A grating machine also is useful for cheese, nuts, bread, suet and such things. Cooking utensils of agate ware will be found a most satisfactory investment. At present aluminum ware is to the kitchen what silverware is to the dining-room—desirable, but expensive—but by and by we may hope to get it at prices within the reach of all. In buying utensils aim to have them of a kind suitable to a variety of uses; for instance, a double boiler will not cost more than two sauce-pans, and it will do their work when required. One lid may fit a baking pan, a frying pan and a steamer. A rolling-pin with solid handles is not so convenient as one which rolls lightly on the axle. Wooden spoons will be found a most convenient kind for many kitchen uses, and do not tire the hand in beating. The best sized bread pans are about eight inches long by four broad and five deep, with nearly straight sides, as this size gives a nice slice when the loaf is cut, and also allows a more uniform heat in baking than a large pan does. These utensils will be still more convenient if a suitable place is found for each and everything kept in its place. Avoid anything which hides dust or dirt, and by practising methodical ways of working, all can more easily be kept clean. Good meals may be served from a poor kitchen, but will probably leave a discontented cook. A little beauty and comfort in surroundings often wields a mighty influence on the food served. A pot of growing parsley in the kitchen not only adds to the cheery appearance of the room, but also to the flavor of various meats and soups to which a sprig is added. Other herbs for this purpose, as thyme, marjoram, sage and savory are kept nicely dried and in boxes. Empty baking powder cans answer nicely for all such purposes, and also for steaming puddings or brown bread.

Then let the food cooked in this dainty kitchen be the very best of its sort and well served. Fresh, clean table linen, shining glassware and dishes, even if cheap, have a happier influence on the home circle than we sometimes suppose, and the aim of good housekeepers is always to be good homemakers. If "people are a reflex of the food they eat and the homes they live in," then great responsibility rests with those who have the keeping of these homes. The highest aim possible for the teacher of domestic science is to help her busy sisters to a more intelligent understanding of their own home duties;

and if our influence is thrown in this direction our lives will not be lived in vain. The balance of power is not wholly with the "new woman" and the ballot, but with the woman who makes the most of present opportunities, who does the "nearest duty" in the most intelligent manner and exerts the happiest and most lasting influence on those by whom she is surrounded in her own little world—the home circle.

FARMHOUSE FARE.

By A. E. Whitaker.

"Farmhouse cookery," as the expression is popularly used, has come to convey the idea either of scrimping and meanness or of extravagance or indigestible profusion. One of the greatest authorities on dietetics says that in rural America we find American cookery at its worst. While these criticisms of country fare are exaggerated, they contain a large grain of truth, and as the nation's life blood comes from the country, it is important that it be properly nourished. The causes of the unscientific country cooking are several. Until within a few years a majority of the women who lived on a farm had to work on a wholesale plan. They stocked the cellar with barrels of salted beef and pork and with bins of vegetables and apples, and they dried and preserved fruit in quantities. When it came to cooking, the same wholesale plan was followed. The enormous Saturday's baking was a necessity, because one must wash, iron, churn, sweep and dust on days systematically set apart for these several kinds of work, and could not get through with her tasks if she stopped to cook everything fresh for each meal. The rows of pies baked at Thanksgiving time that would keep until March, the fruit cake and the pot of doughnuts, were great helps to the busy woman to tide her over emergencies. Economy was unnecessary on account of the abundance of raw materials. Hence plain cooking was undervalued, and recipes were prized according to their extravagance. Then again, no great advance step could be taken readily because the exigencies of house-keeping in an isolated way tended to the retention of old customs; and when one must combine bakery, laundry, dressmaking establishment and dairy under one roof, there was little time, strength or inclination for study. Neither has there been much opportunity for study. The original investigators, the students and teachers of domestic science, have been city people, talking first to those nearest them; expenses for attendance at the city demonstration lectures and classes have been costly, even if the time could be found, and this gives another reason why progress has been slow in the farmhouse. Granted that there is considerable bad cookery in the farmhouse, due somewhat to ignorance of what constitutes good food and its preparation, the remedy largely lies in giving greater opportunities to learn. Newspapers, magazines and books have done much good pioneer work. A great deal that is printed in the newspapers in regard to cooking is the thought and experience of experts, while whole magazines are devoted to the subject of good and healthful foods, and reliable cook-books are within the reach of all.

But too many women read as if their minds were seives. The spoken word is ever more effective than the written word, and if a neighbor tells how a thing is done the housekeeper is interested. The cooking teacher comes in here as an important help; in a broad way she is the neighbor who says, "See how I mix and bake," and her hearers are interested, and, to a degree, imitative. In recognition of this, the Bay State Agricultural Society, whose purpose of existence is largely educational, devised a plan for having lectures upon cookery given in farming sections. The President, Mr. J. D. W. French, well known in Boston for his progressive ideas and good works, enthusiastically made the plans, with the assistance of the writer of this article, for lectures at farmer's meetings in different parts of this state. Miss Ann Barrows was engaged as the lecturer, and her programme brought into use those things that the farmhouse affords in abundance, and which, unfortunately, are not always made the most of. She brought out new uses for the apple and potato, and savory combinations of cheese. The too much neglected mutton, and the tougher portions of beef, were made appetizing and attractive. In the

audiences were almost as many men as women, and many of the former took notes for the wives who did not come. The lectures implanted an interest in the subject, and in nearly every place regret was expressed that a whole course of demonstrations could not be given. This matter of scattering culinary wisdom was followed for two winters, all the expense being borne by the society mentioned. Such a plan of teaching is necessarily handicapped by the great expense, and further work is necessary. Great good can be accomplished by training young girls. In the city public school girls learn the fundamental rules of cookery, both theoretically and practically, but it is too much to expect that the ungraded school can have cookery added to its overburdened course.

Each state has an agricultural college for the benefit of the farming population in the United States, and many of them admit girls on an equality with boys to study botany, entomology, and other interesting subjects of value in practical life. A few of these colleges recognize that scientific housekeeping is as essential as scientific barnkeeping, and have established courses in domestic economy. In New England the Storrs Agricultural College of Connecticut, under President Koons, leads in the advantages given to girls. It provides a course of domestic science with lectures and practice in a kitchen laboratory. President Murkland of the New Hampshire College regrets that as yet no instruction is given in domestic economy and cooking in that institution; it is the intention to do so as soon as possible. Girls have been admitted to the Rhode Island Agricultural College, but no course in domestic economy has been provided for them. President Goodell of the Massachusetts Agricultural College states that such instruction has not been provided for the reason that there has been, as yet, no demand for it. Since opening the college twenty-seven years ago, but four women have applied, and these have studied but a short time. The Maine State Agricultural College, according to President Harris,, provides no instruction in domestic economy. It is possible that when the demand comes, as it surely will, all these institutions will follow the example of the western agricultural colleges, which more generally admit young women and give domestic science an important place. This will give the farmer's daughter an opportunity to become an expert in feeding human beings as is her brother in feeding the cows. One great obstacle to progress comes in the conservative instincts of the human race, which are often developed to a greater extent in the country than elsewhere. The rugged individuality of the farmer's wife, cultivated by the self-reliance begot of her isolation, is not always converted at once. There is a great deal of clinging to the ways that reach back almost to the brick oven days. A woman may acknowledge that there is a cake receipt that she does not own, or one possibly better than she uses, but let the subject relate to such common but necessary topics as bread-making or cooking eggs or meat, and her almost sneering: "I always do thus and so" shows her conservatism and non receptiveness. But a second lecture may tempt her to a trial, and by degrees she may learn enough to discard some of her pet indigestibles. While cooking instruction is recommended to all, and will benefit every woman, too much must not be expected, as a great deal depends upon the natural taste. In olden times whether or not one became a good cook depended upon one having an aptitude for cooking. If a woman was a "born cook" she involved a degree of success, otherwise she rejoiced when successful, aud laid her failures to bad luck.

That all women of equal intelligence have not equal ability at cooking was illustrated to the writer by her grandmothers. One with a natural taste for culinary things, was the notable cook of the neighborhood. The other grandmother had no aptitude for cooking; her soda-raised bread, fried meats and sodden vegetables were detestable. She did not intend to injure her family through their diet, but she undoubtedly did. Being a woman of quick intellect and progressive ideas, had she lived to-day she would have studied and practised until she had conquered the problem of preparing good food. As to the notable cook, modern instruction would have taught her to be less extravagant, to make better combinations without detracting from the appetizing qualities, and to have nourished the body better.

MISS MILLAR'S ADDRESS AT HARROWSMITH

Under the Auspices of Frontenac Institute.

During the recent sessions of the Farmers' Institute of Frontenac at Harrowsmith, a most valuable and instructive paper was read by Miss Millar, of the Ottawa School of Cookery. It was pronounced by the ladies present a remarkably helpful and practical treatment of the subject. The following is the paper in full :

Why should we study this subject? Our brothers study foods for their cattle with the object in view of increased revenue and thus added comfort in the home. We study from the same motive—added comfort in the home. Is not scientific house-keeping as important as scientific barn-keeping? And should not the farmer's daughter become as expert in feeding human beings as is her brother in feeding the cows? A great writer says : " The destiny of nations depends upon the way in which they feed themselves." " The number of inhabitants who may be supported in any country upon its internal produce depends about as much upon the state of the art of cookery as upon that of agriculture. But if cooking be of so much importance it should be studied with the greatest care." " They who provide the food of the world decide the health of the world, and a healthy body is the foundation of an active mind and sound morals."

In this study of foods we should look not only for the kind and proportions of food materials required for the sustenance of life and health, but also at the cheapest forms in which these materials are found. The financial position of the family depends as much upon the skill displayed in spending as in the earning of money. "The secret of thrift is knowledge, and knowledge of domestic economy saves income."

Food may be defined as that which, taken into the body, builds its structure and provides heat and energy for work. The body has been compared to an engine which requires fuel to produce fire. Some of the foods we eat act as fuel, producing heat and work power ; others to repair the daily wear and waste of tissue. From whence is our food supply derived? Plants derive their life and build up their structure from the crude constituents of the soil and air under the influence of the sun's life-giving rays. Animals in consuming the plant life break down this structure again and distribute the several parts to the upbuilding of new forms of matter. Thus we might speak of beef as "manufactured grass." The vegetable growth, having been put through one process of digestion, is said to be more easily digested by man than when taken directly from the vegetable kindom. It is, however, in some cases more expensive.

ANALYSIS OF FOOD.

All kinds of food materials may be classified as follows :

1. Water.
2. Mineral matter.
3. Fats.
4. Starches and sugars.
5. Proteids.

Food adjuncts, as spices, condiments and acids, are not nutrients, but make food palatable and assist digestion. Thus by a judicious use of seasoning, proper cooking and dainty serving, the cheap nutritious foods may be made quite as appetizing as the more expensive kinds. And " to make the mouth water " is to aid digestion and should be the aim of every good cook. Water is found in varying quantities in all our foods, fruits and vegetables, containing often as much as ninety per cent. This " flavored water," as we may call it, is of more value than ordinary pure drinking water, in that it holds in solution certain mineral substances required in the system. These fruit jucies wisely

enter into prepared summer drinks. Of these made drinks I think the most wholesome are lemonade and very, very thin gruel thoroughly cooked and well cooled. A convenient form in which to keep the lemonade is a lemon-syrup made by straining the juice in which has been soaked the grated rinds into a thick syrup made of sugar and water boiled together. Add cold water as required for drinking. Other fruit juices can be kept in similar ways.

Our second class—*the mineral matter*—is essential to the making up of bones and teeth, brains and nerves, an insufficient supply in the food having injurious effects as shown by actual experiment. In our foolish demand for a very white bread we have robbed it of its due proportion of mineral, as the whole wheat meal contains more phosphate than does the fine white flour. The bad effects of an excess of common salt supplied by a salt meat diet are best counteracted by a more liberal use of lemon juice, fresh vegetables and greens. The latter are too often looked upon as unnecessary luxuries than as valuable and healthful additions to the regular summer diet.

The next two classes—*fats and starches*—are the carbonaceous foods or heat and energy producers. Our supply of fats is obtained from the animal kingdom in form of fat of milk, cheese and butter, of eggs, of meat and fish ; from the vegetable world in nuts, seeds and grains. Although nuts are eaten mainly for their oil, some varieties contain other nourishment besides and prove a useful addition to an economic diet as they combine healthfully with fruits. Bacon is said to be the most easily digested fat, while butter is the most palatable. In cooking, however, an economist will sometimes substitute other less expensive kinds, such as drippings, marrow or beef suet. A buttery flavor may be given to the latter by trying it out in milk. Grate or chop fine and add one-half cup of milk for each pound, being careful to prevent scorching by cooking over hot water, and then straining through a fine strainer or cheese cloth. In cold climates much fat is consumed to produce animal heat, and in our own country our diet must be revised for the changing seasons—a summer diet substituting starches and sugars in place of the fats which have over twice their fuel value.

Fourth, *starches and sugars.* These form the largest bulk of our foods, and are the cheapest of the food constituents. They should not, for this reason, however, be used in excess to the neglect of other nutrients, as they do not make a complete diet alone, and an excess would overtax the digestive organs. They are obtained mostly from vegetables, grains and fruits. Sugars are readily absorbed, but starch must be changed into sugar by the action of the digestive fluids, otherwise fermentation may set in with injurious results. This often happens when starch is given to very young children before their digestive organs are sufficiently developed to receive it. Uncooked starch is difficult of digestion, therefore care must be taken that all foods containing large quantities of it should be thoroughly cooked, as flour, oatmeal, corn, rice, potatoes, etc. These all require, in their preparation, heat and moisture, and if the vegetable or grain does not contain water in any quantity it must be added. For example, potatoes contain 75 per cent. of water, which is absorbed as the tiny starch grains swell and burst in baking. This is an ideal way of cooking them if the skins are slightly cracked when soft to allow the steam to escape and so prevent sogginess. Again, rice requires two or three times its bulk of water, and when cooked differs little from potatoes in composition, for which it is substituted in countries where these are not grown.

Proteids. We now come to the best and most important of the food constituents, the proteids, or, as they are sometimes called, albuminoids or nitrogenous foods. These are the flesh or muscle formers, and are often apt to be neglected in an economical diet, as in some of their forms they are more expensive, for instance in fresh meats. Our supply is found in albumen of eggs and of meat, fibrin of muscle, caesin of milk and cheese, gluten of wheat, and vegetable casein of peas and beans. These latter cheaper products are supposed to be difficult of digestion, but with proper cooking this objection is overcome, as we shall see. A good average diet will contain about equal quantities of fat and protein and about $3\frac{1}{2}$ times as much of the starches and sugars.

Our ordinary groceries may be divided into five classes. Those which are composed for the most part of

1. Starches and sugars—Rice, tapioca, sago, potatoes, white bread, corn and fruits.
2. Fats—Butter, fat meat and oils.
3. Protein—Very lean meat, white of egg, macaroni, dried fish.
4. Protein with fat—Meats, milk, cheese, yolk of egg and fresh fish.
5. Protein with starch—Wholemeal bread, peas beans.

It will now be easily seen that the first class must be mixed, either in the cooking or serving, with something from the fourth, and the fifth with the second, to make complete, etc., e.g., with rice we mix milk or cheese, with tapioca and sago, egg and milk or meat stock (as in soup), with potatoes we use meat (or failing that, buttermilk), with bread, butter, and with fruits, nuts. Let us examine more carefully a few of the older combinations of food and see why they are wisely so combined, and then arrange a few newer ones with suggestions for acceptably serving them. We shall give a first place to cereals, since they contain a good proportion of easily prepared and readily absorbed protein—oatmeal on analysis showing more of both flesh-formers and heat-givers than cornmeal or wheat. The raw starch evil must here again be carefully avoided by thorough cooking of these grains. Coarse stone-cut oatmeal or cornmeal requires not less than one hour's steady boiling before it is fit to serve as food. or if cooked in a double boiler, at least three hours. These when served with milk, give a very well-balanced diet to which the Scotchman adds herrings or bacon, and lacks nothing. The New Englander's baked beans supply large quantities of protein and starch at small cost, but without the pork—which is served as a part of the dish—would be deficient in fat, and without the regulation eight hours' baking would be harder to digest and less appetizing. We might wisely give more attention than we do to the use of beans and peas as an economical food, not only in the form of "Boston baked beans" bnt also in soups, either with or without a meat flavor. For example a milk soup made with either green or ripe peas, cooked and strained and nicely seasoned, is a very nourishing one. Other vegetable soups made in the same way also deserve a place on our regular bill of fare. Soda will assist the cooking of these. Other valuable supplies—very common and cheap to the agriculturists—are eggs, milk and cheese, and indeed it is often found necessary, at certain seasons, to use them as a substitute for fresh meats.

The variety of dishes to be prepared from eggs and milk is almost unlimited, but great care must be taken not to overcook them and in that way waste some of their nourishment. Albumen, whether that of eggs or meat, is best cooked at a temperature of about 160 to 170 degrees. (Water, you know, boils at 212 degrees). Therefore in cooking eggs a good plan is to use about one quart of boiling water for four eggs and remove at once to a place where the water cannot boil but will keep at an even heat for about six to ten minutes. The white will be of a jelly-like consistency, but if wished firm all through and yet not horny, keep at this temperature for half an hour. With the simplest combination of eggs and milk—a custard—the same care must be taken. It must not boil, for a curdled custard is a spoiled one, and whether it be a baked or so-called boiled custard, set it in a dish of hot water until just thickened, no longer. This may be further thickened by adding some starchy substance, first well cooked, e.g., bread-crumbs, cornstarch, tapioca, sago or rice. Nuts also give a nice change of flavor and stewed fruits a suitable accompaniment. These milk puddings are much more wholesome than rich pastry, and may be served in more attractive forms by using fancy moulds. A variety of spices and sauces is of just as much importance. One of this group is quite wrongly named a "Poor Man's Pudding," as it is a fit dish for a rich man also. It is made of baking together one-third of a cup or three tablespoonfuls of rice and one quart of sweetened and flavored milk, set in a dish of hot water, about three hours, until of a beautiful creamy consistency.

Then there is a nice list of hot supper dishes to be made with the use of cheese. This consists of about one-third water, one-third fat and one-third of this valuable protein constituent; or more than twice as much as is contained in the same weight of the best

fresh meat, for which it is regularly substituted in some countries. It is more easily digested if cooked with milk than in its raw state, and is usually seasoned with mustard or cayenne peper, these high seasonings exciting the digestive organs to more vigorous action. By adding starch in the form of cooked rice or bread crumbs with a milk sauce—as in cheese puddings—we obtain a typical dish, containing the various constituents in good proportions. Good results are always obtained by cooking with milk and thickening with eggs, as in a Welsh rabbit or a savory custard or omelet and serving with toast. A very hearty dish is also made by combining the cheese and milk sauce with cooked macaroni, if carefully prepared. The macaroni being manufactured from the hardest kinds of wheat contains in itself a fair proportion of the nitrogenous or flesh-forming ingredients, and served with a white sauce alone makes a better supper dish than fried potatoes, which many mistaken persons value too highly.

The most popular and most expensive forms of protein we find in fresh meats. While it cannot be denied that no flavor can replace that of meat, we very often so waste it in cooking that we get little else but flavor. In salting meat we lose about two-thirds of its nutritive value and when overcooked we also lose considerably. The difficult problem is—particularly with the tougher portions—to sufficiently soften the fibres and yet not overcook the albuminous juices surrounding them. These juices cook, like the egg, at a low temperature, and if this can be maintained for a very long time the fibre will also be softened. Therefore cook tough meat a long time at a low temperature. A few such rules are all we can give here on the cooking of meats. The principal object is to keep the natural juices of the meat in it. For this reason we endeavor to first sear a thin coating on the outside of the cut surface quickly and then cook more slowly. As in roasting we have a hot dry oven for a very few minutes and then reduce the temperature. The frequent bastings with hot fat also tend to keep the juices from getting out by forming a coating all over it. The same thing is done in boiling over an open fire of hot coals or in frying in deep fat. In boiling, the meat is plunged into the rapidly boiling water for a few moments and then cooked so slowly as to almost steam-cook it. When we wish to draw out the juices as for soup or beef tea we cut fine and soak awhile in cold water before the long cooking. This process shows that good meat should never be plunged into cold water to wash it as that wastes the juices. Wipe with a wet cloth. For soup making, bones and trimmings answer as well as good meat, and bones of roasts and of fowls should not be thrown away, as they contain some nourishment still. Herein lies one secret of economy, and though our purse may be small we may still live luxuriously. Someone says: "Individuals are a reflex of the food they eat and the homes they live in, and a dyspeptic stomach is responsible for many misdeeds that are attributed to a carnal heart." If this be so, we should be most happy if in any degree we have helped to enlighten the path of some housewife earnestly endeavoring to give her family the best possible nourishment and so keep them, so far as she can, in possession of the blessings of good health and happiness.

MISCELLANEOUS DEPARTMENT.

THE OUTLOOK FOR THE ONTARIO FARMER.

By Thos. H. Mason, Straffordville, Ont.

After one of the most trying seasons that Ontario agriculture has ever been subjected to, it is a difficult thing to try to speak of the farming outlook in Ontario in a very optimistic strain; still, if we will look carefully at our position, study the causes of financial depression and the inevitable revulsion that always follows, as surely as day follows night, it will be seen that we have good cause for hopefulness; that we are almost through the long stretch of hard times and are rapidly nearing the point where better times begin. We have had in the past, periods of great prosperity due to our fertile soil, healthy climate for man and beast, unequalled water communication,

giving cheap transportation before the development of railways, the best cereal land on the North American continent, giving the largest yield per acre and the finest quality of wheat, peas, barley, and oats. We have also one of the most hardy, industrious, vigorous, and economical populations on the continent. Then, too, our freedom from wars and military expenditure has conduced to our prosperity, while we have had the benefit of supplying the waste caused by the wars of other countries. The civil war in the United States, and the construction period following for years after the war, made an immense market for Ontario produce at remunerative prices. The last few years have witnessed a great change; there have been no great wars, while there has been an immense development in the production of cereals in different parts of the world, owing to the opening up of new regions, and the cheapening of transportation. Russia, India, the Argentine Republic, Chili, Australia, the United States, and our own Northwest, have all wonderfully increased their exports, and it seems that the limit of expansion has not yet been reached. Now, bearing in mind these facts, it would seem that under ordinary conditions, so far as the grain trade is concerned, we have reached a permanently lower level of prices. There will be fluctuations, and a great war or a great failure of crops would see a temporary return of the old prices. and a greater re-action after the cause had been removed. I will try to sketch briefly the condition of the principal productions of Ontario for 1896, as it appears to me. The cheese trade is in a much better condition than it was twelve months ago. The stocks in store in this country and Great Britain are not nearly so large as they were then and the outlook is much better. One year ago the exporters held in cold storage large quantities of cheese that had been purchased at high prices. Consumption of cheese in Great Britain was hardly up to the average, owing to hard times. There were some large shipments of Australian and New Zealand cheese, and the amount of fodder cheese made in Canada during the winter and spring of 1895 was abnormally large. The holders of cheese naturally did not wish to sell and lose money, consequently a great many held in a falling market, and a large portion of this cheese was placed on the market at the same time as our early summer make; this caused the stagnation in the cheese market during 1895. The number of cattle being fed for export in Ontario is smaller than for some years past, owing to the scarcity of hay and straw. The sheep trade is in a healthy condition, the prospects being brighter than for three years past. The number of sheep on this continent has been reduced four millions since the spring of 1893. For some years previous to 1893 we had good prices for sheep and lambs. As a consequence the stocks were increased. In 1893 when the Mills' bill was before Congress, it was proposed to put wool in the free list. The United States is a great wool importing country, and the wool growers thought that their business would be ruined. There was a panic and a stampede to get out of the business; all through the west flocks were sacrificed at ridiculously low figures, in some cases as low as fifty cents and one dollar per head. When in Chicago in the fall of 1893, going through the stock yards I found the pens crowded with breeding ewes that were being forced on the market at any price. The receipts at the great receiving points of the west,—Chicago, Omaha, St. Louis, and Kansas City—for the four years previous to 1893 averaged 2,800,000 annually. In 1893 they increased to 3,800,000, and the movement has continued till the receipts for 1895 are the largest on record, over 4,300,000 head. In Ontario we are largely following the lead of our American friends; our exports to Great Britain having increased from 5,000 to 10,000 annually to 217,000 in 1895, and these are largely the pick of the young breeding ewes of the country. As a consequence there is sure to be a shortage in sheep and lambs in the near future. As to the horse trade,—I know it requires a great deal of courage to say anything cheerful in regard to it, but I believe that there will be a great scarcity of horses in Ontario before two years are over. According to the returns of the Bureau of Industries in 1892 when the business was comparatively prosperous, we had in Ontario some 688,000 horses, of which number 220,000 were three years and younger, giving an annual production of more than 70,000. In 1894 the numbers were reduced to 674,000, of which 190,000 were young horses. After

making enquiry in a good many sections in Ontario. I do not believe that we are raising more than 20 per cent. of the number raised in 1892. If that estimate be correct, we are producing about 14,000 horses annually. On the other hand, owing to the low prices of horses and the scarcity of feed, we have had horses sacrificed that under ordinary conditions would have given years of useful service on the farms more than was ever before in history of the country. Then, too, we have this year exported to Great Britain some 13,105 head. I do not know the number to the United States, but it is several hundred head, enough to practically bring the number up to the old figures when the trade was prosperous. I do not wish to advocate that every farmer should go into horse breeding, but I do wish that every farmer would examine these figures carefully and draw his own conclusions. But you may say, "I can go out and buy horses for half what it costs me to raise them." So you can to-day, but if we do not raise any young horses, how will we replace the horses that are being worn out on our farms? I believe that by that time we will find horses dear, and I think that every farmer should take steps to replace his farm teams by the time his old ones are unfit for use.

CONSTITUENTS OF SOILS.

By W. A. Stephens.

In order that there may be no misunderstanding I shall state at the outset what I mean by soil in this short paper. Soil may be briefly defined as the part of the ground that can be cultivated and in which plants grow. It varies in depth from a few inches to several feet, and has been formed from the crumbling down of rocks and admixture of decaying vegetable matter. From the way soil has been formed one can easily predict that the kind of soil will, in great part at least, depend on the kind of rocks from which it was originally formed Generally, and practically speaking, we may say that soil principally contains;—First, sand; second, clay; and third, humus.

Sand. Pure sand consists of grains of silica, which is composed of two elements, viz, silicon and oxygen. It is well known in a form called quartz. Sand is very often mixed with grains of lime, mica, etc., forming special varieties, such as calcareous and micaceous sand. Although sand is important in soils, giving them a loose and friable nature, yet it cannot be said to be plant food. It is not in the proper condition for plants to use because it is not soluble in water. A mixture of sand among the clay renders the soil loose and easy to work, admits of the free passage of the roots of plants, readily absorbs heat and retains it much longer than the other constituents of the soil. From these facts it will be seen that sandy soil will be loose, easy to work, warm, and free from baking; will easily lose soluble food by leaching, and will not stand dry weather for a great length of time.

Clay. Pure clay is composed of silica and alumina, and sometimes lime, or a silicate of alumina and lime. It is, however, very seldom pure. It nearly always contains potash, ammonia, and other things, and often these impurities combine with clay and form what are called double silicates, such as silicates of alumina and potash, and silicates of alumina and lime. These double silicates are of the greatest importance to plant life on account of the lime and potash which they contain. Clay is not plant food, but the impurities found in it, such as potash, lime, etc., are important and even necessary as plant food. Clay, being fine in texture, possesses in a high degree the power of absorbing moisture and ammonia from the air, and of retaining water, ammonia, phosphoric acid, and other substances necessary to plant food.

Humus. This consists of decayed or partially decayed vegetable matter, and is usually spoken of as the organic part of the soil. It is of a dark brown or black color. Good examples of this are found in leaf mould or muck. Its chief constituent is carbon, but of course it contains all of the materials found in plants, and by its gradual decomposition these substances are yielded up little by little as plant food. Humus

is the chief source of nitrogen in the soil, and therefore a black soil rich in humus is certain to be rich also in nitrogen. It may be mentioned here that new or virgin soil owes its great fertility to the large supply of nitrogenous matter contained in the humus. Of all the ingredients in the soil humus has the greatest power to absorb and hold moisture, which it does by capillary attraction. The absorbtion of ammonia by humus is also very important. Humus improves the texture of soils by rendering clay more friable and sand more compact and more capable of retaining manures.

Having given a very brief account of the three important parts of the soils, allow me to briefly classify soils :

	Per cent. sand.	Per cent clay.
1. Sandy,	80-100	20 00
2. Sandy loam,	60- 80	40-20
3. Loam,	40- 60	60-40
4. Clay loam,	20- 40	80 60
5. Clay,	10- 20	90-80

Calcareous soils are those that contain much lime, and those with a large amount of vegetable matter, peaty soils, vegetable soils, or vegetable moulds.

Plant food in soil. Sand, clay and humus which form from 95 to 97 per cent of the soil, give body to the soil and save as a covering for plant roots, hold the elements for plant nourishment, and furnish the necessary conditions of heat and moisture ; but excepting a little of the humus they are not themselves plant food. The analysis of the plant shows that carbon, hydrogen and oxygen, nitrogen and sulphur, iron and potassium, all appear to be necessary to the plant, and are of first importance while phosphorus, calcium, sodium, magnesium, chlorine and silicon are found in small quantities, and are considered to some extent at least as of secondary importance. The most important sources of food are found in,—nitrate of ammonia ($N H^4$) 2, $N O^3$ supplying nitrogen, hydrogen and oxygen ; water $H^2 O$ supplying hydrogen and oxygen ; nitrate of potash, supplying nitrogen, potassium, and oxygen ; carbonate of potash, supplying carbon potassium and oxygen ; carbonate of lime supplying calcium, carbon and oxygen ; silicates of lime or soda, and phosphates of lime and magnesium.

Too much can not be said or done to impress upon the agriculturist the necessity of preserving the fertility of his soil by a proper cultivation and attention to rotation of crops. All the ashes made on a farm should be used as a fertilizer, not sold for a few cents per bushel. All the farm-yard manure made on a farm and all that can be obtained from town and villages should be used. The fertilizers to be used of course will depend on the deficiency in the soil or on matter in the soil not available for plant food, and its need to be dissolved so that plants can use it.

SAVING AND APPLYING MANURE.

By Jas. B. Muir.

The money value of manure is seldom estimated by farmers in proportion to its importance. Judicious saving and application of the manure made on the farms, would greatly increase the annual yield of agricultural products per acre. When we speak of a manure we usually have reference to the droppings of the animals, together with what litter may have been used as an absorbent. But anything that can be applied to the land for the purpose of increasing the plant food in the soil, may be spoken of as a manure. Thus when we plow under clover, peas, buckwheat, etc., we are manuring the land just as thoroughly as though we had plowed under the same equivalent of animal droppings. And there are a great many cases where this system gives splendid returns, especially where clover is turned under. By frequent seeding down to grass, and plowing under the sod thus formed, we obtain a large quantity of organic matter, that by its

decay renders the soil much more productive than where the land is kept constantly under. Many farmers have an idea that to have manure they must keep their farm stocked to the utmost capacity. Their object is to have the manure, even if they lose on the stock. I prefer to keep only good stock, or stock that will yield an equivalent for the food given them, and have the manure as part of the profit. On many farms, less stock, better fed and bedded, would make more and better manure, than where more are kept and badly attended to. It is a mistake to keep stock simply for the sake of making manure. On many farms, the best of the manure is lost because not enough litter has been in the stables to absorb the liquids. Liquid manure is richer in available plant food pound for pound than solid, and should be saved and applied to the land even more carefully than the rest of the droppings. On most farms straw is the only absorbent used, and when not cut up short it will not hold much of the liquid. If cut straw, dried swamp muck, or sawdust is used, there need be very little waste. During summer there is often a great waste of manure through carelessness in not keeping the stock on the fields where pasturing; they are allowed to stand or lie in the lanes, on the roadside, or in the yard where the manure is practically lost. By this means much of the value to be gained when pasturing a field is wasted. Where care is exercised in preventing this it is surprising the amount of fertility that may be saved during a summer from the stock on an average farm. Quality in manure is even more important than quantity. The quality of manure is determined largely by the nature of the food or other material entering into its composition. Thus, rich concentrated food will yield manure much richer in plant food than poor bulky foods. Rich foods also make a manure that is more easily assimilated by plants; its plant food is in a more available form. Manure from rich foods is also more active, and by its decay in the soil, helps to render available inert plant food already present.

Dr. J. B. Laws has prepared a table of the comparative value of manures made from different grains and fodders that are usually fed to stock. It is prepared by estimating the nitrogen, potash, and phosphoric acid in the manure at the usual market price of those elements in artificial fertilizers.

He estimated a ton of			Wheat Straw	made into	manure	as	worth..	$2 69
"	"	"	Oat	"	"	"	"	.. 2 90
"	"	"	Pea	"	"	"	"	.. 3 74
"	"	"	Barley	"	"	"	"	.. 2 25
"	"	"	Clover Hay		"	"	"	.. 9 64
"	"	"	Oats		"	"	"	.. 7 70
"	"	"	Peas		"	"	"	.. 13 38
"	"	"	Shorts		"	"	"	.. 13 53
"	"	"	Wheat Bran		"	"	"	.. 14 59
"	"	"	Linseed Meal		"	"	"	.. 19 72

The manure made from a ton of each of those may not be worth to us what Dr. Laws estimates it at in his table of values, as we may not be so situated as to receive the full benefit from the manure. But if a ton of manure made from wheat straw is worth to us half of Dr. Laws' estimate, the value of manure made from other foods should be reduced in the same proportion. Manure made from rich food requires to be carefully saved and attended to, as being more soluble it is much more liable to waste.

Of the different methods of saving manure until it can be applied to the land, keeping it under cover or in box-stalls where made is attended with the least waste. In stables where it has to be removed daily, there is the least waste when the manure is spread directly on the land. A ton of green manure contains as much plant food as a ton of the same manure that has been allowed to rot in the usual way. Piling manure in heaps to heat and rot is always attended with considerable loss of plant food. When it is not convenient to haul directly to the fields and spread the manure, it may be kept in sheds or piled nicely in the yards. Manure should never be scattered over a large yard, as the snow and rain carry the soluble portion away. When manure is kept in a shed under

cover, it frequently over heats and allows the nitrogen to escape in a form of ammonia which is extremely volatile. Over heating may be prevented by keeping the manure well tramped by the stock. Horse manure should be mixed in with the manure from the cow stable, as it is very liable to overheat when kept by itself. As a rule, the quicker the manure can be applied to the land from the stables, the smaller will be the percentage of loss.

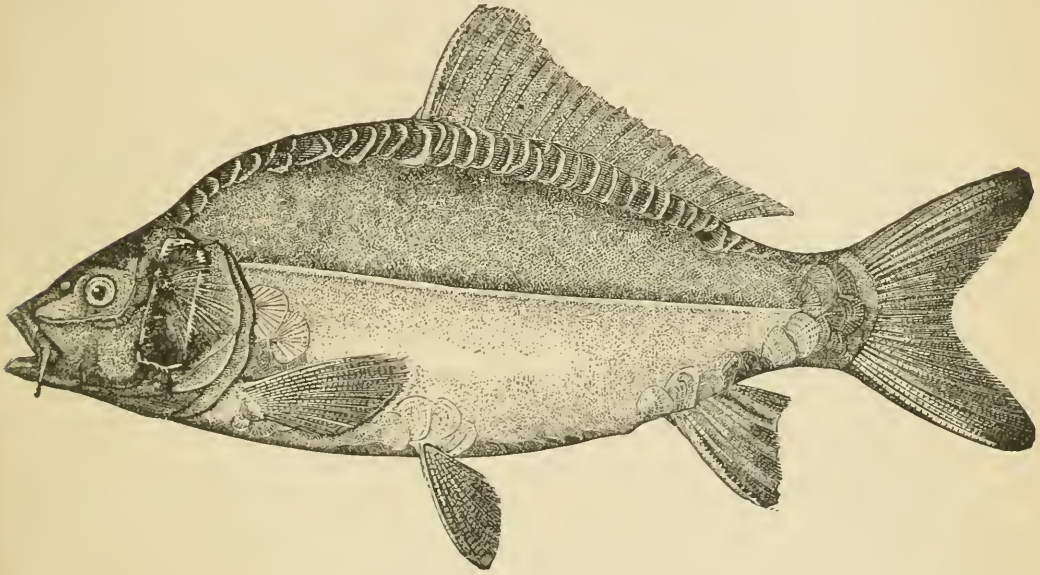
I prefer applying manure to a growing crop whenever possible. During the winter if spread on grass land or fall wheat, we usually have very marked results during the following spring and summer. Where clover is to be sown with wheat, a top dressing of manure during the winter insures a good catch. When spread on grass land that is to be plowed the following spring, the soil will be very mellow, and an excellent seed bed will be the result. This is especially noticeable on clay lands, and as they are very retentive of fertility, there will not be much loss unless very heavy rain storms occur. Under a good top-dressing the action of the frost completely pulverizes the soil, and as evaporation is checked during the spring, sufficient moisture is retained to keep the soil in the best possible condition for promoting rapid growth. During the winter of 1894 I top dressed about one-half of the land intended for corn the following year. Just previous to planting the corn, the remainder of the field was manured at about the same rate per acre. During the summer while the corn was growing, it looked as though different varieties of corn had been planted. On the part of the field manured during the winter, the corn was taller and healthier and gave a heavier yield by at least five tons per acre. A neighbor manured part of his wheat field during the winter, and by so doing nearly doubled the yield of wheat. When not manured in the fall, land intended for roots will invariably yield a larger return where top-dressed during the winter than if the manure is not spread on the land until the spring. Where bare fallowing is practised, the manure gives best returns when applied to the land either during the winter or as early as possible the following spring. Manure always seems to give the best results when spread on the land some time previous to planting the crop. When manure has been kept over the summer (but this is always attended with great loss), it is better to spread it on grass land, as the fall rains stimulate a vigorous growth of grass, and thus prevent the soluble portion from washing away. When well rotted manure is applied to stubble land in the fall, much of the fertility is washed away before the spring crop can assimilate it. My experience proves that it is not best to plow manure in too deeply. I prefer spreading on the surface, and then harrowing or cultivating it. When land is seeded down after being thus treated, a good catch is generally the result. A light dressing at short intervals will give better returns than a heavy dressing and none for several years. To obtain best returns from manure, the land should be thoroughly underdrained, so that all water passes into and not off the soil. We have said nothing about artificial manures, as the average farmer uses very little, and I believe the cheapest and best manure can be manufactured on the farm.

PROFIT IN CARP.

By D. N. Kern.

Carp are making their way to the front, and day by day command more and more attention of farmers and other persons who give thought or consideration to the economy and wealth of the soil. The boards of agriculture, in states where there are excellent and efficient fish commissioners, are taking hold to aid them in the introduction of fish raising, and recommend carp in particular as the fish specially adapted to most of the conditions of universal fish growing. And in many of the states prominent members of agricultural boards are addressing farmers' institutes and other agricultural meetings upon the subject of carp raising, its practicability, its simplicity, and its outcome and resources to those who engage in it. Pisciculture is one of the pleasantest, brightest, most luxuriant, and best paying branches of agriculture. From state agricultural boards the interest is spreading out and reaching country agricultural societies, and they are beginning to

encourage exhibits of carp at county fairs by providing basins and water for their keeping, and protecting them like other goods that are brought to the fair. I had one year a lot of small and large carp at our Lehigh county (Pa) fair. I received several dollars in premiums, and besides that I sold every carp, large and small, at a fancy price. The attraction of my fish exhibition was great. But in many sections the carp men have been a little slow to push their claims and show their carp in such a way as to call the attention of the general public. If the directors of agricultural societies would realize the benefit of building a pool or basin ten or fifteen feet in diameter and twelve or fifteen inches deep, filled with clear water, and offer a premium of $3 to $5 to the person who would stock it with about one dozen carp, they would soon learn that it would be a great attraction, especially to the boys and girls. This would awaken an interest and many carp ponds would be built, and all those who had such ponds, and stocked with carp, would soon learn that there was more profit in carp than in raising corn or wheat, that is, if you compare the same area in wheat or corn to the water area that is stocked with carp. About ten years ago I had two females and one male carp in a pond containing half an acre. I got 1,100 young carp; these I sold for $100. There was such a demand



THE MIRROR CARP (*Cyprinus Carpio.*)

for young carp that year that I could have sold fifty thousand young ones at ten cents a piece. I shipped carp that year to the following named states: Pennsylvania, New York, New Jersey, Connecticut, West Virginia, Georgia, Florida, Ohio, Indiana, and Illinois. Times have changed, and at this present time I am satisfied if I get two cents a piece for my young carp. Sometimes I have more than I can sell at that price. I am always very careful that I do not overstock my ponds.

If I have any surplus young carp I generally put them into some of the mill ponds in my neighborhood, and by so doing I found out that it paid me better than by keeping them and have my own pond overstocked. This is one of the main causes why many people fail in making carp culture profitable. Who would think of putting fifty head of cattle into a three acre field from May 1 to October 1? I think every one who reads this article will say: "Why, these cattle would starve." Five thousand carp in a pond of one acre would not starve, but at the same time they would grow very little and get stunted so that the whole lot would not bring five dollars in the market, while 800 two-year old carp in a pond of one acre would be worth at least $160. For the last few years I have adopted a new plan to dispose of some of my carp at a fancy price.

After September 1st I get a short article published in some of the local newspapers inviting any person who is anxious to fish with hook and line to come to my carp ponds and catch as many carp as they wish to have at the following prices: From ten to fifteen inches long, one cent per inch; over fifteen inches at fifteen cents per pound. A great many persons from towns and cities come to my place to fish and to row the boat, bathe, or pick some of the beautiful and fragrant white water lilies. I generally furnish hooks and lines. For some parties I prepare a special bait, and they are always willing to pay me well for all my trouble. I have had people from the city pay me more than I had asked. It is not always the money you get for an article that is the most benefit to you, but to come in contact with people from a distance gives you a chance to learn something that perhaps you had never known before. I have several springs boxed up four by five feet, and four feet deep, with a tight fitting cover on and a good lock to it. In these boxes I generally keep carp during the winter months. Very often it happens that there are sick people who get an appetite for fish, or perhaps the doctor advises them to eat it, so I never have any trouble to sell all the carp I have to spare, and besides this I can have fish in my family as often as we want them, and whenever we have them we know that we have genuine fresh fish. Another big profit in my carp is, they tell me what kind of weather we will have. This is of great benefit to me during haying or harvest. I have studied their habits so well that I can always tell whether we will have high wind, rain or dry weather, and this is worth a great deal to the farmer, at least it has been so to me.

If I could only have a carp pond in my house yard I would pay a big price for it. I am of the opinion that I could learn nearly as much from the carp about the weather as if I had a barometer, and besides, it would give more real pleasure to watch them in their sport than to look upon a barometer that is hanging on the wall of your house. I have been farming for thirty-five years and I have done considerable experimenting with different fruits, grain, etc., but I must say that one of the most profitable things that I have on my farm is my carp ponds and carp.

STEPPING STONES TO THE IDEAL HOME.

By Mrs. R. Rogers, Kinsale, Ont.

We are all painfully conscious of the fact that there are unhappy homes in our midst, and a look into some of the causes of these will perhaps help us to find some remedy which will improve their condition. In the first place we believe one of the most obvious causes is to be found in the use, or rather misuse, of alcoholic liquors. The happiness of more homes, it is truthfully asserted, is wrecked by this than by any other one cause; and we believe, also, that the more immediate remedy for this evil rests in the right use of the ballot, which, as yet, has not been placed in the hands of the women; but we may do what we can to help to banish the great evil from our midst by using what power and influence we have with those who do hold the power to use it. And now while so many are awakening to the enormity of the evil, is the time to use that influence for the good of our land, and for that of our own homes. When men are looking about them for standard bearers to uphold the banners of truth and freedom for our people (freedom from a worse bondage than that of human slavery, because it chains with the fetters of death both the soul and body) now is the time, if ever, for men to seek for that wisdom which will guide them in finding the right men for their leaders—those who will fearlessly face the foe, and fight for the cause of prohibition and right against every opposing element, and thereby laying the chief corner stone of the ideal home of the future. It is right and proper as well as helpful to us all that we should hold up before us a model of that which we wish to attain to, whether it be in our homes or in our characters; for let us strive as we will, there will always be a wide interval between practical and ideal excellence. We wish to call your attention to-night to the ideal home, and to show how we may, in a measure, realize its happiness for ourselves; and if thereby one sister is

helped, one heart raised to God in gratitude for His goodness, or one home made better and more akin to the heavenly home above, I shall be more than amply rewarded. The outside world with its bustle and cares, its successes and failures, belongs principally to the stronger sex, and rightly so; but to the mother, wife or sister belongs the duty and pleasure also of making the home and its surroundings what it ought to be, a haven of rest and peace for the oftentimes weary, over-burdened and discouraged father, brother or husband. Whatever of worry or of censure he may have to contend with in the outer world, he should find in the ideal home that love and sympathy which will ever help and enable him to bear manfully the burdens and anxieties of the day. And from whom can he more naturally expect these than from her whom he has set up to be queen of his household, be she his wife, mother or sister? The ideal home is one which by no means exists in idea only. It is quite possible to have such a home, as many can do doubt testify; but in order to build up such a home the character of the parents must be unexceptional, and moulded after an ideal character. There must be a unity of purpose and a thorough understanding between the heads of the family, that no discord may ever mar the harmony of the lives therein. Mutual forbearance and a sincere Christian love for one another are the strongest and most important ties which should bind together the members of the family which fill the ideal home. These are absolutely necessary in order to ease the shocks, to soften the sharp retorts and to forgive the hasty acts which will sometimes spring out by reason of the many cares and worries incident to everyday life. Absence of real sympathy and forbearance for one another are prominent among the causes which make many homes unhappy; and where love is not the ruling power in the family there is almost sure to be more or less discord in their midst. Sad, indeed, is the condition of that home where these requisites for the unity and harmony of its inmates are lacking. Fear, such as blights and withers the clinging tendrils of love between children and parents, should never exist in the ideal home, but that love which casts out all fear, save the fear of offending God and them by wrong-doing, should ever be cherished by parents till it reigns supreme in each trusting little heart confided to their care. The ideal home being now presided over by ideal parents, as such they will study the best interests of their children in every way. They will endeavor to ascertain the bent of each tender awakening mind, and whatever place or position in the world which God has given their children brains and abilities to fill, they will, to the extent of their power, assist and prepare them to fill worthily, and by so doing become fellow-workers with God in bringing about His designs and purposes concerning them. Who can tell how many failures in life have not been brought about by parents, though unthinkingly it may be, but nevertheless wrongly, forcing their children into some (to them) uncongenial occupation or employment, when, if they had been permitted to follow the dictates of their own nature, they might have become useful citizens, ornaments to society and bright and shining lights in the world? Parents, think of it. Our children are not born to become mere machines for making money with, that we may add acre to acre, and to heap up wealth for us or for themselves. They have thinking, reasoning minds, and never-dying souls to save. Shall we stunt the growth of those minds that our ends may be gained? Shall we neglect their souls that we may gather together that which both they and we will presently have to go and leave behind us? No! no! rather let us strive to teach them to "Seek first the kingdom of God and His righteousness, and all these (necessary) things will be added thereto." "Our children," as declared by a noted writer, "are born to higher destinies than their fathers." By their increased opportunities and privileges they will be fitted to become the actors in a far advanced period of the church and world. Let their minds be formed, their hearts prepared and their characters moulded for the scenes and duties of a brighter day, when the ideal homes will be less rare than they are now, and when this old world will have become the better because we have lived in it, and because of the sacrifice which we of to-day have made for our children. We have spoken heretofore of the right use of the ballot as the more immediate remedy for the evils of alcohol, but that it was not as yet placed in the hands of the women; but there is a wide, open field, wherein, if they will, they may labor for the same results, more slowly, perhaps, but in the end more surely.

We mean that by training and educating the children and youth of our land in wise and temperance principles, and that by thoroughly instilling into their young minds a hatred for the accursed traffic in alcoholic drinks, they will, when they have become men and women, be found ready to act, and to act decisively and in the right direction; for the children of to-day will be the men and women of the coming years, upon whose shoulders may hang the future destinies of by no means the smallest of the world's nations. The temperance societies for the young, where they are rightly conducted, are doing a good work in furthering the cause of prohibition. The Sabbath Schools, Christian Endeavors and other commendable church organizations are also doing a good work, and all are thereby laying a solid foundation upon which to build the ideal home of which we have been speaking. The Farmers' Institutes, such as we have had here to-day, the Mechanics' Institutes, which furnish for our young people good literature and comfortable reading-rooms, are all worthy of our heartiest support and warmest encouragement, because they tend to educate our young people in the right direction, and to lay the corner stone for future usefulness in life.

May they prosper and grow until the end for which they were instituted shall have been achieved, and their object in our lives accomplished; for they are all important stepping stones leading up to the ideal home.

ANNUAL REPORTS

OF THE

LIVE STOCK ASSOCIATIONS

OF THE

PROVINCE OF ONTARIO

1895-6.

DOMINION CATTLE BREEDERS' ASSOCIATION.
DOMINION SWINE BREEDERS' ASSOCIATION.
DOMINION SHEEP BREEDERS' ASSOCIATION.
DOMINION SHORTHORN BREEDERS' ASSOCIATION.
DOMINION AYRSHIRE BREEDERS' ASSOCIATION.
HACKNEY HORSE SOCIETY.
CLYDESDALE HORSE ASSOCIATION.
SHIRE HORSE ASSOCIATION.
CANADIAN HORSE BREEDERS' ASSOCIATION.

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CONTENTS.

DOMINION CATTLE BREEDERS' ASSOCIATION.

PAGE.

OFFICERS FOR 1896 2
LIST OF MEMBERS FOR 1896 3
SEPTEMBER MEETING 5
President's Address: Object and Aims of a Live Stock Association: J. I. HOBSON 5
Present Day Conditions: Hon. JOHN DRYDEN 8
FIFTH ANNUAL MEETING: 10
Address: PRESIDENT MILLS 10
Address: THE SECRETARY 14
Report of Secretary and History of the Association: F. W. HODSON 14
Constitution and By-laws 18
Financial Statement 26
Transportation of Live Stock: R. MILLER 27
The Present Quarantine Regulations: JOHN I. HOBSON 30
Transportation of Live Stock: D. G. HANMER 36
Address: Lieut.-Governor KIRKPATRICK 37
Report of the Transportation and Quarantine Committee 40

DOMINION SWINE BREEDERS' ASSOCIATION.

OFFICERS FOR 1896 44
LIST OF MEMBERS FOR 1896 46
SEVENTH ANNUAL MEETING 51
Reports of Representatives to Fair Boards 51
A few comments on the Swine Breeders' Report for 1894: Capt. A. W. YOUNG 54
MEETING OF THE DIRECTORS 55
Treasurer's Report 55
Annual Report of the Secretary 56
Registration 62, 67
Interview with the Minister of Agriculture 64
EXECUTIVE MEETING OF THE DOMINION SHEEP AND SWINE BREEDERS' ASSOCIATION 65
SEPTEMBER MEETING 69

DOMINION SHEEP BREEDERS' ASSOCIATION.

OFFICERS FOR 1896 72
LIST OF MEMBERS FOR 1896 73
EIGHTH ANNUAL REPORT 75
President's Address: JOHN JACKSON 76
Reports of Representatives to Fair Boards 76
Directors' Meeting 80
SEPTEMBER MEETING 82

APPENDIX A.

PAGE.
BREEDERS' JOINT MEETING 83
Chairman's Address: Hon. JOHN DRYDEN 83
Address of Welcome: JAMES INNES 84
Address: ANDREW PATTULLO 85
On Exports of Live Stock: Prof. JAMES ROBERTSON 88

APPENDIX B.

TWELFTH ONTARIO PROVINCIAL FAT STOCK AND DAIRY SHOW 97
Cattle, 96—Sheep, 98—Swine, 100—Dairy Department, 102—Total Entries, 103.

APPENDIX C.

THIRTEENTH ONTARIO PROVINCIAL FAT STOCK AND DAIRY SHOW 105
General Rules and Regulations 107
Prizes to be awarded 109

SHORTHORN BREEDERS' ASSOCIATION.

ANNUAL MEETING 116
Tenth Annual Report of Secretary and Executive Committee 117
Financial Statement 119
Canadian Cattle in the British Markets 123
What is Character? ROBT. MILLER 124
How are we to Improve the Standard of our Shorthorn Herds? T. E. ROBSON 125
Shorthorn Trade in England in 1895, and Reflections thereon 127

DOMINION AYRSHIRE BREEDERS' ASSOCIATION.

ANNUAL MEETING 129
President's Address 129
Ninth Annual Report of the Executive Committee 130
Financial Report for 1895 131
The Ayrshire the best cow for the Canadian farmer: JOSEPH YUILL 133
Description of Ayrshire Points: WM. STEWART, jr 135
Ayrshire Matters: H. E. EYRE 136
The Ayrshire Cow: WM. STEWART, jr 137

HACKNEY HORSE SOCIETY.

ANNUAL MEETING 140
Secretary's Report 140
Treasurer's Statement 141
Hackneys—1895: GEO. H. HASTINGS 142

CLYDESDALE HORSE ASSOCIATION.

ANNUAL MEETING 145
Secretary's Annual Report 145
Treasurer's Report 146
President's Address 147
Committee Meeting 150

SHIRE HORSE ASSOCIATION.

ANNUAL MEETING 152
Secretary's Seventh Annual Report 152
Treasurer's Statement 153

CANADIAN HORSE BREEDERS' ASSOCIATION.

Horse Show Committees 154
Second Annual Canadian Horse Show 155
The Financial Statement 166

FIRST ANNUAL REPORT

OF THE

DOMINION CATTLE BREEDERS' ASSOCIATION

1895-6.

To the Honorable the Minister of Agriculture :

I have the honor to submit herewith the Annual Report of the Dominion Cattle Breeders' Association.

Your obedient servant,

F. W. HODSON,
Secretary.

OFFICERS FOR 1896.

Honorary President.....Hon. Thomas Ballantyne, Stratford.
President .....John I. Hobson, Mosboro'.
Vice-President .....J. C. Snell, Snelgrove.
Secretary-Treasurer .....F. W. Hodson, Guelph.

Vice-Presidents (representing the various Provinces):

Ontario .....J. C. Snell, Snelgrove.
Manitoba .....John E. Smith, Brandon, Manitoba.
North-West Territories and British Columbia..Geo. H. Greig, Winnipeg, Manitoba.
Quebec .....H. D. Smith, Compton, Que.
Nova Scotia .....Lt.-Col. W. M. Blair, Nappan, N.S.
New Brunswick .....Julius Inches, Fredericton, N.B.
Prince Edward Island.....F. G. Bovyer, Georgetown, P.E.I.

Auditors ..... { D. McCrae, Guelph. / Jas. Russell, Richmond Hill.

Directors:

Shorthorns.....A. Johnston, Greenwood.
Herefords .....Alf. Stone, Guelph.
Polled Angus .....Jas. Bowman, Guelph.
Galloways.....D. McCrae, Guelph.
Ayrshires .....W. W. Ballantyne, Stratford.
Holsteins .....G. W. Clemens, St. George.
Jerseys and Guernseys.....Capt. Wm. Rolph, Markham.
Devons .....W. J. Rudd, Eden Mills.
Ontario Agricultural College ....G. E. Day, B.S.A., Guelph.

Executive and Programme Committee ..... { President, Vice-President, Secretary, / Messrs. G. E. Day and David McCrae.

Winter Show Committee..... { Messrs. Jno. I. Hobson, G. E. Day, / D. McCrae and the Secretary.

Transportation and Quarantine Committee .... { Messrs. Jno. I. Hobson, A. Johnston, / D. McCrae and F. W. Hodson.

LIST OF MEMBERS OF THE CATTLE BREEDERS' ASSOCIATION FOR 1896.

Name.	Address.	Class.
Bowman, Jas.	Guelph, Ont	Polled Angus.
Bull, B. H. & Son	Brampton, Ont.	Jerseys.
Ballantyne, W. W	Stratford, Ont	Ayrshires.
Blyth, R	Marden, Ont.	Shorthorns.
Bolton, F. & W	Armstrong's Mills	Shorthorns.
Brown, D	Iona, Ont	Durhams.
Biggins, W. J	Clinton, Ont	Durhams.
Cowan, Wm	Guelph, Ont	Shorthorns.
Chinnick, Jas. & Ed	Box 425 Chatham, Ont	Shorthorns.
Douglas, Jas	Caledonia, Ont	Shorthorns.
Davidson, Jas. I	Balsam, Ont	Shorthorns.
Davis, H. J	Woodstock, Ont	Shorthorns.
Dryden, Hon. John	Toronto. Ont	Shorthorns.
Else, Leonard	Boxall, Ont	Jerseys.
Elliott, W. R	Hespeler, Ont	Shorthorns.
Edwards, W. C	Rockland, Ont	Jerseys, Shorthorns, Ayrshires.
Flath, Lewis	Drayton, Ont	Jerseys.
Fairburn, H. K	Thedford, Ont	Shorthorns.
Farmers' *Advocate*	London, Ont	
Gibson, R	Delaware, Ont	Jerseys, Durhams.
Gaunt, E. & Sons	St. Helen's, Ont	Durhams.
Gardhouse, Jas. & Sons	Highfield, Ont	Durhams
Holland, Isaac	Culloden, Ont	Ayrshires, Guernseys.
Hunter, Jos	Alma, Ont	Shorthorns.
Hood, G. B	Guelph, Ont	Grades.
Herdt, Chas	Frome, Ont	Jerseys.
Isaac, Jno	Markham, Ont	Shorthorns.
Johnston, A	Greenwood, Ont	Shorthorns.
Leask, Jas	Greenbank, Ont	Durhams, Clydes.
Linton, Wm	Aurora	
Miller, R	Brougham, Ont	Shorthorns.
Martin, J. W	Canton, Ont	Shorthorns.
Marshall, B	Snelgrove, Ont	Holsteins.
Miller, John	Markham. Ont	Shorthorns, Durhams.
Mutrie, John, M.P.P	Oustic, Ont	
Morton, David & Sons	Hamilton, Ont	Ayrshires.
McCrae, David	Guelph, Ont	Galloways.
McCorkindale, John	Guelph, Ont	Shorthorns.
McQuillan, A	Guelph, Ont	
McCallum, John	Iona Station, Ont	Durhams.
Nicols, W. H	Hamilton, 462 King St. E	Dealer.
Oke, James	Alvinston, Ont	Shorthorns.
Russell, Jas	Richmond Hill, Ont	Shorthorns.
Rudd, W. G	Eden Mills, Ont	Devons.
Rolph, Wm	Markham, Ont	Jerseys.

MEMBERS OF THE CATTLE BREEDERS' ASSOCIATION.—*Concluded.*

Name.	Address.	Class.
Rivers, William	Walkerton, Ont	Shorthorns, Shropshires, Berkshires.
Russell, Thos	Exeter, Ont	Shorthorns.
Rice, A. & G	Curries, Ont	Holsteins.
Rusnel, D. H	Stouffville, Ont	Shorthorns.
Ramsay, A. G	Hamilton, Ont	Jerseys.
Ransford, R. & J	Clinton, Ont	Grades.
Snell, J. C	Snelgrove, Ont	Jerseys.
Stewart & Son	Lucasville, Ont	Polled Angus.
Smith, Amos	Trowbridge, Ont	Shorthorns.
Sibbald, F. C	Sutton, West, Ont	Shorthorns.
Stewart, Wm., Jr	Menie, Ont	Thoroughbred Poultry, Ayrshires, Scotch Collies, Berkshires.
Sorby, D. & O	Guelph, Ont	Ayrshires, Clydes and Hackneys.
Silcox, Edgar	Shedden, Ont	Jerseys.
Smith, W. M. & J. C	Fairfield Plains, Ont	Ayrshires and Jerseys.
Smith, Jas. S	Maple Lodge, Ont	Shorthorns.
Shaw, Robt	Woodburn, Ont	
Scott, F. W	Highgate, Ont	Durhams, Berkshires, Duroc Jerseys.
Sharpe, Jas	Rockside, Ont	Polled Angus.
Stone, Alf	Guelph, Ont	Herefords.
Tolton, James	Walkerton, Ont	Shorthorns and Durhams.
Thompson, E	Guelph, Ont	Durhams.
Watt, J. & W	Salem, Ont	Shorthorns.
Wright, Herbert	Guelph, Ont	Shorthorns.
Whitlaw, A	Guelph, Ont	Shorthorns.

DOMINION CATTLE BREEDERS' ASSOCIATION.

SEPTEMBER MEETING.

A meeting of the Dominion Cattle Breeders' Association was held in the Secretary's tent on the Exhibition Grounds, Toronto, on Wednesday evening, September 11th, 1895, at 8 o'clock. The President and Vice-President being absent, Mr. Johnston was unanimously elected to the chair, and thanked the audience for so honoring him. The minutes of the last meeting were read and confirmed. The report of the Committee appointed to prepare the Constitution and By-laws was then read, discussed and amended in some minor particulars.

Moved by Mr. HOBSON, seconded by Mr. RUSSELL: That the report of the Committee as amended be adopted. Carried.

Hon. JOHN DRYDEN, Minister of Agriculture, and the Vice-President came in just after the meeting opened and gave valuable assistance in discussing the Constitution and By-laws.

THE OBJECT AND AIMS OF A LIVE STOCK ASSOCIATION.

The Chairman called upon Mr. HOBSON, the Vice-President of the Association, to address the meeting, who delivered the following address:

A few days ago our Secretary wrote me asking that I give an address at this meeting stating the objects of the Association. The reason that I was asked to do so, was, I suppose, in case the President of the Association might not be able to attend, then, as Vice-President, I would make the necessary explanations. I have long ago found out that our Secretary lays his plans carefully, and never leaves anything to chance. In that he acts wisely.

The Cattle Breeders' Association, like that of the Sheep and Swine Breeders', is not being established in the interests of any one particular industry, and still less in the interests of any single breed, but upon the broad ground that the cattle interests of this country will be advanced and the individual stock owner largely benefited by the meetings of the Association and the work to be done by it.

Among the objects to be aimed at, should be to bring together, as far as possible, stockmen who are interested in raising and handling cattle, for whatever purpose. Every effort should be put forth to make the meetings interesting and instructive and of a character to inspire its members with more zeal and courage to face the difficulties of the keen competition we now have to contend against, and to awaken a spirit of ambition and enthusiasm, which in itself is no small factor in leading to success. With this end in view special means should be used to try and secure the attendance at our meetings of the very best stockmen in the country; and when I say the best stockmen, it is meant,

not men who can talk only, however well that may be, but men who have unmistakably shown by their own successes that they thoroughly understand and follow out in their own practice the sound principles that underlie successful stock management in the department which is their own speciality. In fact we might with profit go a great deal further in this direction, and follow the course now pursued by the Sheep Breeders' Association, and obtain some of the most progressive and advanced stockmen across the line to read papers or deliver addresses at our annual meetings. If this was done, and opportunity given for full and free discussion, it would make the meetings intensely interesting, and of that educational character which would be far-reaching in its efforts, and contribute more directly and perhaps in a larger measure to the material interests of the people than the originators of this Association would ever contemplate. It, however, may with certainty be said, that if the work is taken hold of heartily the benefits which are sure to result from it in many ways can hardly be over-estimated.

The general meetings will bring together the most intelligent and progressive stockmen in the country—men representing every branch of the cattle industry. There will be at these meetings representatives of all the various breeds. The merits of the different breeds of meat producing and dairy stock, with the effect upon them of the varied climatic and local conditions, will be fully discussed, and in that way a much better knowledge will be obtained of the effect of soil and climate on the animals of these different breeds than is now possessed by the average farmer of the country. The young man who may have inherited as an heir-loom from his father the prejudice that every other stockman, however different the conditions may be to his own, is of a certainty wrong if he is not following the system which he and his forefathers have adopted, will at these meetings have that prejudice rudely dispelled from his mind.

Perhaps no better illustration could be given of what are the possibilities in this line than to look at what has been achieved by the Sheep and Swine Breeders' Associations. The formation of these associations is of a comparatively late date—somewhere about the beginning of the present decade—and during this short period, under their instrumentality, a great deal of useful work has been done, many valuable papers have been published, much attention has been paid to the proper manner of selecting judges to act at the different exhibitions, a large amount of money has been given to aid the Provincial Fat Stock Show, much consideration has been given to the rules governing the judging at shows, and in many other ways have the interests of the sheep and swine breeders, as well as the farming community of this country, been advanced by the good work done.

So fully alive are the breeders and farmers to the advantages to be gained by fostering these associations that we see the meetings more largely attended each succeeding year. The foremost representatives of the different breeds have thrown themselves heartily into the work, and the meetings have become notable for the valuable papers and addresses read and delivered, and for the full and intelligent criticism and discussion of them.

I have spoken somewhat fully of the work being done by these associations for the reason that the Cattle Breeders' Association will necessarily work very much along the same lines, and it is to be borne in mind that the same strong hand which has been such a potent factor in building up and bringing these associations to such a high state of efficiency, will bring the same talents and energy to bear on the work to be done by him as secretary of this Association. A word and I am done. If associations of this sort have done good in the past—and they undoubtedly have—they are more than ever needed now when we have to contend against the competition of every land, at a time when a general railroad system is opening every producing country, when the cold storage system is being introduced on all the great steamship lines, and when science is doing so much in many ways to enable the producers in every land to lay down their products, at an ever decreasing cost, in the great consuming markets of the world.

SUSSEX COWS, THE PROPERTY OF THE O. A. C., GUELPH.

PRESENT DAY CONDITIONS.

Following is an address delivered before the Dominion Cattle Breeders' Association by Hon. John Dryden, Minister of Agriculture :

Mr. CHAIRMAN,—I wish to say to you that personally I would like this Association to flourish and become strong and influential like the sister associations representing the sheep and swine breeders. In order to have a strong association there are several things necessary : First, the branch of agriculture represented by the association should be sufficiently important to gather to it a number of the most intelligent, enterprising and influential of those who are engaged in promoting the particular industry. It cannot be denied that cattle raising in Ontario alone is of sufficient importance to command the attention of the very best of our agriculturists. We have recognized already the importance of the other live stock interests by the organization of strong associations representing them, but no one, I hope, will be offended if I say that this industry is of greater importance to the country than either of the others referred to. If we add the export of dairy products to the export of beef cattle we shall discover to what dimensions the cattle trade of this country has grown. The figures are as follows for the fiscal year ending June 30, 1894 :

Export of cattle from Canada		.....	$6,499,597
"	butter	"	1,095,588
"	cheese	"	15,488,191
			$23,083,376

The greater part of the above is sent to Great Britain, and there is exported as well a considerable amount of bye products or refuse of cattle.

It is not enough, however, to have an important industry which it is sought to be represented in this way. Those who are engaged in it must express a willingness and a heartiness in co-operating together for the common good. There are some things in connection with cattle raising which I can accomplish perfectly all alone; but there are other things in connection with the industry which cannot be brought to pass without the union of those interested. It is evident that if the cattle industry should be laboring under any obstacle which can only be removed by recourse to those in authority in our country, a single individual presenting the case would have but little weight. But when a strong association, representing vast interests, unitedly petitions the authorities and properly presents their case, even the dullest politician comes to see that something must be done by way of relief. I have a case in my mind at present. Those of us who are engaged in breeding thoroughbred cattle know the difficult situation at present. Formerly we had a large trade covering various states of the American Union. Our cattle, because they were imported into that country for breeding purposes were allowed to enter free of duty. They are still allowed to enter duty free, and yet the trade is practically prohibited. It has brought about in this way: Formerly Canada enjoyed an advantage over the Americans, because our cattle had access to the inland markets of Great Britain while those of the United States had to be slaughtered at the port of entry. In order to hold our position in this respect a quarantine was placed on American cattle coming into Canada. At that time there was danger of certain diseases which then existed being brought into this country, and it was an essential thing to prove that our herds could show a clean bill of health. Notwithstanding this an embargo has been placed upon our cattle similar to the Americans, and it has been over and over again declared by the British authorities that we have sent from this country pleuro pneumonia—a disease which no man, expert or otherwise, can find in the Dominion. This statement serves as an excuse for the British authorities to maintain the embargo. We have hoped to see it removed. The case has been presented to three different Governments, but the answer has always been the same ; and our conclusion now is that the majority of those whom the Governments represent do not wish it to be removed, and it is likely therefore to remain. If this be true, why should this quarantine be kept up? The quarantine which the Ameri-

cans have placed on our cattle is not to keep disease from entering the United States but it is placed there because we have placed our quarantine against them. At present there is no cattle disease in Canada which can be carried into the United States, nor do I know of any disease in the United States which could be brought to Canada. You cannot keep up the best herds of the country unless the proprietors of these herds can have a very extended market. It will be impossible to maintain them in their present flourishing state if the market is limited to our own Province or Dominion. To allow these herds to deteriorate in quality and decrease in influence will in the end react upon the ordinary cattle of the country. It is therefore of the utmost importance that they should be maintained. Now this is a matter that cannot be handled by any single individual. But if the cattle breeders are of one mind, which I think they are, then the presentation of the case from a strong association representing the best of our farmers interested in this great industry would be necessary in order to secure any relief in this regard.

The next thing which I would suggest as being needful towards carrying on a strong association is good officers. I mean officers who do not accept the position merely as one of honor, but who are prepared for the time being while they hold the position to manifest some spirit of self sacrifice for the good of the Association. Associations of this kind will not run themselves. Men of brains must be at the head of them, men of industry, men of activity; and I have only to express the hope that the officers appointed to-day will realize the responsibility of their position. I hope they will not be ashamed to let it be known that they represent a large number of members, and an important industry concerning which there are great possibilities in the future. It is necessary, if the Association be as successful as I would like it, that much enthusiasm should be manifested. This enthusiasm must begin with the officers. If these officers sit down and do nothing but wait for the turn of events the end of it will be that nothing will be done by anybody. It is their first duty to set the ball rolling, and I trust that as it is now started it will be kept rolling until the Association is made to represent in every way this important industry in our Province.

Mr. Johnston: I am fully aware of the great influence and force exerted by such an Association and can fully endorse what Mr. Dryden has said about there being strength in unity. Mr. Dryden has done much for the benefit of cattle breeders, and I know that if we have demands to make and make them through our Association, he will be ever ready to give us all the assistance possible for the furtherance of the objects and interests of cattle breeders. You may not know what he has done in the past, but I do, and I have felt it right here in my pocket. (Applause).

Mr. F. W. Hodson: What the Minister has said he will do, but we must do our part, and in order to get a Government grant we must have fifty members. Now if each one will do his part we can have fifty members before Christmas and thus be entitled to receive a Government grant.

The meeting then adjourned.

FIFTH ANNUAL MEETING.

The fifth annual meeting of the Dominion Cattle Breeders' Association was convened in Shaftsbury Hall, Toronto, on April 17th, at 2 o'clock, 1896. In the absence of the President, Mr. THOMAS BALLANTYNE, who was in Great Britain, the chair was occupied by Mr. JOHN I. HOBSON, of Mosboro'.

ADDRESS BY PRESIDENT MILLS.

Dr. Jas. Mills, President of the Agricultural College, Guelph, by request, delivered the following opening address: I believe this is the fifth annual meeting of this Association. On December 14th, 1892, there was a meeting of stock men held at Guelph for the purpose of organizing an association such as you have had from that time to this, to be known as the Cattle Breeders' Association of Canada. A good set of officers was appointed and arrangements made for drafting a constitution and by-laws. The second meeting was held at the Rossin House in March, 1893, and a constitution and by-laws were adopted. The third meeting was at the Rossin House in March, 1894. At this meeting there was some discussion as to the lack of interest manifested in the Association. The fourth meeting was held at the Rossin House in April, 1895, when the question of lack of interest and want of success was considered among other questions, and a new constitution and by-laws were ordered. At the meeting held on the Exhibition Grounds, Toronto, in September, 1895, the new constitution and by-laws were adopted, and the name of the Association changed to the Dominion Cattle Breeders' Association.

Now, the objects of this Association are certainly good. They are as follows:

1. To encourage the *general* and *constant* improvement in the *breeding* and *management* of cattle:

First. By the dissemination of *reliable* and *practical* information on the subject.

Second. By co-operating with fair associations to encourage good exhibitions of cattle.

Third. By holding or assisting to hold a winter exhibition of cattle.

Fourth. By encouraging the keeping of records of cattle.

2. To select judges for fair associations.

3. To *instruct and interest* the farmers of Canada in CATTLE HUSBANDRY, and to forward the interests of cattle breeders in every honorable way.

As to the work already accomplished, I notice, first, that an effort was made to secure a grant from the Dominion Government. The record says that the deputation received a promise but no money. This, I think, was to be expected, for I do not see that that Government could make the Association a grant unless it could be shown that it embraced all sections of the Dominion. Although it is called a Dominion Association the members come almost entirely from Ontario.

Second. The next thing done was to pass a declaration to the effect that there never has been a case of contagious pleuro-pneumonia in Canada.

Third. A deputation sent to Ottawa to secure, if possible, the recognition of our herd and flock books by the Government of the United States in its customs regulations, on the ground that our standards of registration are in every case as high as the corresponding standards in the United States, and in some cases higher.

Fourth. The question as to whether oleomargarine is manufactured in Canada or not investigated and reported upon.

Fifth. Selections of expert judges made for fairs and exhibitions, and important recommendations made regarding the number of judges.

Sixth. An application made to our Provincial Minister of Agriculture for an annual grant to assist the Association in carrying on its work, which application, we are glad to say, was successful, the Minister having put $1,500 into the estimates in response to this application.

Seventh. The appointment of a committee to interview the authorities of the G. T. R. and C. P. R. as to recent changes in the regulations of these roads regarding the classification of cattle for shipment singly or in small lots—regulations which, in a short time, have paralyzed the live stock industry of the whole Dominion. The committee appointed for this purpose did its work well. It could not have done better. It not only got the obnoxious regulations cancelled, but secured important concessions in regard to shunting and the sending of attendants with thoroughbred animals. The work of this committee has saved the country directly and indirectly thousands upon thousands of dollars. In fact it has saved our trade in the breeding and distribution of thoroughbred cattle.

Eighth. This same committee has been commissioned to interview the Dominion Government regarding the *very grievous quarantine regulations* now existing between Canada and the United States. So far as I can see, we have neither inlet nor outlet for thoroughbred cattle at present. Importers are deterred by the tuberculosis test at Quebec, and our export trade is hindered on one hand by the exclusion of our live animals from the British market, and on the other by the quarantine regulations in force between us and the United States. Something must be done. We look to the committee for good work under this head.

Ninth. The decision to hold or assist in holding an annual exhibition of beef and dairy cattle. An important decision. If this work is well and wisely done on practical lines, much good will be accomplished—directly, to those who are now importing and breeding beef and dairy animals; indirectly, to the rising generation of stockmen; and this latter point is, we think, one of the utmost importance to our country.

Our climatic conditions and natural resources are a fixed quantity, and we are pleased to know that, on the whole, they are good—well adapted to the breeding and raising of first-class stock. And we are not lacking in capital, so the great problem is, how shall we develop and improve the industrial qualities of our people?

The achievements of the Danes, the Scotch, the Germans, and others go to show that the wealth and prosperity of any people depend much more upon their industrial qualities than upon the natural resources of the country in which they live.

To what were our achievements at the World's Fair in Chicago due? Wonderful achievements in cattle, sheep, hogs, horses, and poultry; cheese, fruit, and many other things. Not to the fact that Ontario is much better adapted to the production of live stock and a fine quality of food and milk than New York, Michigan, Illinois, Wisconsin, Indiana, and Kentucky, but to the industrial qualities of our Canadian people. Here we have very few Italians, Spaniards, Bohemians, Russians or Turks; but we have a nice blending of English, Irish and Scotch who are fairly well educated and have been trained to habits of industry and economy—men who think for themselves and are anxious to keep abreast of the times. These qualities have told and will always tell in the world's great competitions.

Let us then, by live stock exhibitions and other means of education, do what we can to improve the industrial qualities of the rising generation of Canadian farmers—to make them more intelligent, progressive and successful men than their predecessors. Let us teach them to observe, read and think for themselves, and inspire them with an ambition to be something more than average men. Too many are satisfied to live and move along on the dead level. There is a super-abundance of such men in every calling. They are tripping one another, but there is a great scarcity of first-class men—first-class teachers, preachers, lawyers and doctors, and first-class farmers.

Hence I do not hesitate to commend to the best of my ability, not only your efforts to remove the disabilities under which our stockmen labor in regard to markets, transportation, etc., but your determination to improve the industrial qualities of our farmers by the publication of papers, addresses, and discussions on practical topics, and the holding of an annual exhibition of beef and dairy stock.

You have received a liberal grant from the Ontario Government, and we may now say that everything will depend on the management. No association can accomplish anything without a good secretary. I think you have a good one. Mr. Hodson is shrewd, active and aggressive, a man of untiring industry, who will leave no stone unturned to make your association a power for good in the country; and with such a staff of officers as you have to assist the secretary in his work, I think the outlook of the Dominion Cattle Breeders' Association is all that could be desired.

Just a word of advice. Rest not night or day till all is done that can possibly be done in regard to the recognition of our herd and flock books in the United States, and till the quarantine regulations are changed so as to facilitate the import and export of live stock in this country.

Also a word of warning. Be careful not to strike the rock on which so many government-assisted associations have already split—the expenditure of too much money for the work done. Such associations are under strong temptations to hold unnecessary meetings, to appoint unnecessarily large committees for various purposes, to employ too large a staff of officials in managing exhibitions, and in other ways to increase unduly the outlay for travelling expenses and various services.

It is possible to be too lavish or too close. I am sure the golden mean will be your aim.

I should like to call attention to the suggestion recently made by Mr. H. J. Hill, of the Toronto Industrial Exhibition, that a trade might be opened up between the Dominion and some of the great South American republics. I understand that at present they buy all their breeding animals in the United States. We are convinced that this country can produce at least as good animals for breeding as can be produced anywhere on this continent. A number of you have, I believe, felt that something ought to be done to call the attention of these people to the large supply of first-class stock to be found here. Mr. Hill has made what appears to me to be a practical suggestion. He states that you have consented to leave your stock for eight days at the Industrial for exhibition, which leaves time for a thorough inspection of the animals. Now, he proposes that you or somebody else ask the Dominion Government, or some other government (he suggested Dominion because this is called a Dominion Association), to invite these republics to send competent representatives here to spend two or three weeks during the time of our fall exhibitions, see what we can produce, and report to the people at home; and not only to invite them, but agree to pay the expenses of their trip. The cost of a ticket to Canada and back, with an allowance of $5 per day for expenses, would not amount to a great deal, and fifteen hundred or two thousand dollars could not be better expended than in this direction. If we want to improve the industrial condition of our people, the main thing is to find an outlet for our stock, and nothing should hinder us from sending it to any place where we can sell it. (Applause.)

The CHAIRMAN: The subject of Dr. Mills' address gives food for thought. There have been some valuable suggestions thrown out, and it would be quite in order to spend a short time discussing them, especially the last one, because it raises the question whether it would be wise, from a business standpoint, to suggest to our government the bringing in of representatives from South American republics. I should like to make a remark on what has been said about a grant from the Dominion Government. I understood Dr. Mills to say that we could not reasonably expect it until we could show that this was a Dominion Association. I think he is a little mistaken as to the course we take. When we went to Ottawa as a delegation, we took the ground that this was and always had been a Dominion Association, that we intended to deal with matters of Dominion importance, and to bear this out we need go no further than refer to what was done a few weeks ago with regard to freight rates. These matters are of importance to all sections of the Dominion alike.

A MEMBER: How far away is the Argentine Republic? How does the distance from Canada compare with the distance from England? They purchase largely in England, and it is to their interest to do so, as they ship largely to that country.

Mr. ARTHUR JOHNSTON: I have greatly wished for at least a portion of that trade for a great many years. The tone of the British market is influenced more by these republics than elsewhere. I do not see why we could not have a portion of this market except for two reasons: first, we are absolutely unknown to them as producers of this class of cattle, and second, as to the possibilities for transportation. Distance does not make so much difference as it formerly did; it is a question as to whether there is enough trade to make a paying communication. If there is anything to be done, it must be in the way of obtaining information in regard to facilities for transportation. I have never seen any good results from the exportation of breeding stock. When they arrive at their journey's end and are taken to be sold they are not in their usual condition, and the men disposing of them cannot remain to put them in proper shape. I would never consent to attempt what was a failure in the United States—to export breeding cattle to these republics. As to the work of this Association, as Mr. Dryden, I think it was, first said to me, there is nothing we need so much as cattle breeders as an Association by which we can not only reach each other, but be able to reach the authorities. I think this has never been more prominently brought before us than at the present time. I may be said that the government never sanctioned the increased freight charges. Why? Simply because we brought pressure to bear until the government saw that it would be impossible to do so and stand well with the country. None of these changes really have the force of law, nor can the charges really be collected until the Dominion Privy Council sanctions the tariff rate. As President of the Shorthorn Association, I wrote to Ottawa immediately just as strongly as I possibly could. We have reason to be thankful to the Minister of Agriculture, Mr. Dryden, for his support. This Association is not a combination against the rest of the world, but a combination for our own general interests. Until we have this, we can never get consideration from the railways or any other institution. The chairman has pointed out that it is not local; we are either a success for the whole Dominion or not a success at all. Every man ought to take a personal interest in the Association, whether he is engaged in the breeding of stock or simply feeding cattle. I do think if any means could be devised by which a knowledge could be sent to these American republics that we have cattle suited to their purpose, it would be a good thing, but not to undertake to export such cattle.

Mr. ROBT. MILLER: I may say that I am in the habit of meeting representatives of the Argentine Republic nearly every year, and I happened on one occasion to meet a gentleman who was sent to purchase for one of the smaller republics. I can say, if it would be any inducement to try to get the Dominion Government to move in the matter, that these gentlemen are certainly the hardest competitors we meet with in any market where we go to buy. They pay far better prices than we can. I think they are the kind of men we want to come here. I believe we could furnish better animals for their purpose than those they get from Great Britain now. If an effort were made in this direction, it should be to induce representatives from the smaller republics to come—not the Argentine. In that republic the greater part of the cattle belongs to the large proprietors. They have been going to England for a great many years to sell their cattle, or have their representatives there, and it would be difficult to get them to change. In the smaller republics they are just starting out in the direction of improving their cattle, and it would be an easy matter to get their representatives to come here.

The CHAIRMAN: Are there no trade relations between these republics and Canada Is there no line of shipping?

Mr. DRYDEN: I do not think so.

Mr. MILLER: They have to be shipped through New York.

The CHAIRMAN: Before we go into the question of advising the Dominion or any other government to give a grant, the first thing to consider is whether it would really benefit us. If there is no line of shipping, we could not build up a trade without it.

Mr. JOHNSTON: That is the great difficulty.

ADDRESS BY THE SECRETARY.

Mr. Hodson: We did not expect many here to-day but the representative men from different parts of the Province. There are two reasons for this: Although this Association has been in existence for six years it never had a membership until recently. The first constitution was the cause of the failure. It provided that every association in the Province interested in cattle should pay ten dollars each year and be represented by two members on the Board. All the cattle associations were supposed to be so represented. Things went on till September of last year in that way. If a man, himself, pays a dollar into an association he has some interest in it, but this is not the case if some one else should pay even ten dollars for him. Then this Association has to contend with the jealousy of the minor associations, and wherever that is the case they are not likely to subscribe to our funds. These are the reasons why the Association did not gain ground. A number of men, however, interested themselves in the work, and these deserve the thanks of the live stock men of the Province. The men who have stood by the Association are Hon. Thos. Ballantyne, Messrs. Hobson, Johnston, Snell, Gibson, Rolph Russell, McCrae, D. E. Smith and a few others.

These came to the meetings at a good deal of personal sacrifice, believing that the Association could be made a success. I find it very much harder to resuscitate an Association than to found a new one. We want the farmers of the country to become members. Last year I was instructed to have printed and distributed the constitution and by-laws. I have sent a copy to every known cattle breeder and also a letter asking them to send me the name of anyone interested in pure-bred cattle. I received about 600 names in reply,—the flower of the cattle breeders. To these men I sent a copy of the constitution, etc., and a programme of this meeting. Every newspaper in Ontario has been sent similar data—there are four hundred of them—and I sent also a letter asking each editor to give us an editorial notice. Ever since September the newspapers have helped us well, especially the larger papers, without money and without price. There is only one paper that has asked us to pay for announcing our meetings, and I think the thanks of this Association are due to the press of this country for the help given us.

In December of last year we practically had not a member. We now have sixty-six who have paid their fees. That is a good growth in six months. We ought to have 200 members. How are we to get them? One thing stands in the way. The Farmers' Institutes furnish a great deal of literature for twenty-five cents a year. Some men will say "This is enough, and I am not going to pay a dollar into an association when I can get all this for a quarter." Are we public-spirited enough to give a dollar to help the thing along? If every member would go to his neighbor and induce him to join, we should have the additional 140 in a very little while. The very first man you meet, if he owns a cow, ask him to become a member. This is the only way we can get members and can grow.

REPORT OF THE SECRETARY AND HISTORY OF ASSOCIATION.

As this year we will present to the Government our first annual report, I have decided to prepare a history of this Association.

On December 14th, 1892, a meeting of the representatives of the different Canadian cattle breeders' associations met in the committee room of the Victoria Rink, Guelph, and organized a Cattle Breeders' Association. Those present were: J. C. Snell, Snelgrove; H. Wade, Toronto; T Guy, Oshawa; R. Gibson, Delaware; D. McCrae, Guelph; Jno. I. Hobson, Mosboro; A. Rawlings, Forest; C. M. Simmons, Ivan; F. R. Shore, London; R. R. Sangster, Lancaster; D. E. Smith, Brampton; F. W. Hodson, Guelph.

Officers were elected as follows: President, Hon. Thos. Ballantyne, Stratford; Vice-President, R. Gibson, Delaware; Secretary, D. E. Smith, Brampton; Treasurer, H. Wade, Toronto.

A WEST HIGHLANDER.

The secretary was instructed to notify the secretary of each Canadian cattle breeders' association, and request that two delegates be sent by each body to a meeting to be held at an early date, when a constitution and by-laws would be submitted.

Second Meeting of Association.

The next meeting was held in the Rossin House, Toronto, on the evening of March 8th, 1893. The following gentlemen were present: Hon. Thos. Ballantyne, R. Gibson, D. E. Smith, H. Wade, J. C. Snell, D. McCrae, J. Weld, R. Marshall, A. Rawlings, Wm. Dawson, Vittoria; F. A. Fleming, Toronto; Caleb Rawlings, Ravenswood; J. Sissons, Barrie; J. Y. Ormsby, Toronto.

At this meeting the following gentlemen were elected to represent the different breeds:

Shorthorns: A. Johnston, Greenwood; J. I. Hobson, Mosboro'.

Ayrshires: James McCormick, Rockton; D. Morton, Hamilton.

Herefords: F. A. Fleming, Toronto; H. D. Smith, Compton, Que.

Guernseys: S. A. Fisher, Knowlton; Dr. Ormsby, Danville, Que.

Holsteins: R. Marshall, Snelgrove; D. E. Smith, Brampton.

Polled Angus: James Cochrane, Compton, Que.; Wm. Stewart, Lucasville.

Jerseys: J. C. Snell, Snelgrove; W. Rolphe, Markham.

Galloways: D. McCrae, Guelph; Wm. Kough, Owen Sound.

Devons: W. J. Rudd, Eden Mills; Samuel Harper, Cobourg.

The following constitution was then read clause by clause and adopted:

(See constitution as revised.)

Messrs. A. Johnston, Greenwood; J. Y. Ormsby, V.S., Toronto; and Jas. Cochrane, Compton, Que, were appointed a deputation to proceed to Ottawa and ask a grant from the Dominion Government to promote the interests of the Dominion Cattle Breeders' Association.

The following resolution, drafted by R. Gibson, was submitted to the meeting and unanimously adopted: "That this meeting states in the most positive and emphatic manner that there has never been a case of pleuro-pneumonia in any herd in Canada. Had such a disease existed it would most certainly have come to our knowledge."

The following Cammittees were appointed:

Registration: J. C. Snell, F. A. Fleming, Jas. McCormack.

Legislation: A. Johnston, J. Y. Ormsby, Jas. Cochrane.

Transportation: D. McCrae, S. A. Fisher, Jno. I. Hobson.

Exhibition: H. D. Smith, W. Keough, Wm. Rolph.

Third Meeting.

The next meeting was held March 20th, 1894, in the Rossin House, Toronto. Members present: Hon. Thos. Ballantyne in the chair, Messrs. R. Gibson, Jno. I. Hobson, A. Johnston, R. Marshall, J. C. Snell, F. R. Shore, G. W. Green, W. J. Rudd, F. A. Fleming, Wm. Rolph, D. E. Smith.

The election of officers resulted as follows: President, Hon. Thos. Ballantyne; First Vice-President, R. Gibson; Second Vice-President, F. A. Fleming; Secretary, D. E. Smith; Treasurer, H. Wade.

The lack of interest taken in the Association was discussed, and the secretary was instructed to write to the secretary of each Canadian Cattle Breeders' Association, asking each to send two delegates and subscribe ten dollars, as required by the constitution.

J. C. Snell and D. E. Smith were appointed a committee to investigate and report regarding the manufacture of oleomargarine in Ontario.

The legislation committee were instructed to proceed to Ottawa and interview the Dominion Government and lay before them the great injustice done Canada and the great inconvenience caused Canadian breeders of live stock by the enactment of the customs regulations now enforced by our American neighbors, Canadian herd or flock books not being recognized, though having as high a standard in every case as the corresponding American records.

Fourth Meeting.

The next meeting was held in the Rossin House, Toronto, April 19th, 1895, Hon. Thos Ballantyne in the chair. Other parties present were: Messrs J. C Snell, A. Johnston, Jas. Russell, D. McCrae, F. R. Shore, R. Marshall, J. I. Hobson, Wm. Rolph, D. E. Smith, F. W. Hodson, and others.

President, Hon. Thos Ballantyne; 1st Vice-President, John I. Hobson; 2nd Vice-President, Wm. Rolph; Secretary-Treasurer, F. W. Hodson; Auditors, D. McCrae and Jas Russell.

"Why does this Association not grow and occupy the important place it should?" was discussed at length, and it was decided that the constitution and by-laws were faulty, and that the Association could not be made a success until they were changed. Messrs. Ballantyne, Hobson, Hodson, Snell and McCrae were appointed a committee to draft a new and more suitable constitution and by-laws.

A resolution was passed instructing the secretary-treasurer to reimburse D. E. Smith's expenses, incurred during his term of office.

D. E. Smith and J. C. Snell reported that they had investigated and found that oleomargarine was not being manufactured in Hamilton or elsewhere in Ontario.

Mr. Johnston, reporting for the legislation committee, said that the committee had visited Ottawa and interviewed the Dominion Government. They were kindly received and promised a grant of $1,000 to promote the interests of the Association, but that said promise was not fulfilled. Mr. Johnston further stated that the Hon. John Dryden had corresponded with American officials, urging that modifications be made in the existing American tariff as it affects Canadian records of live stock. As yet these efforts have not been successful.

The next meeting was held September 11th, 1895, in the tent of the superintendent of Farmers' Institutes, exhibition grounds, Toronto, A. Johnston in the chair.

The report of the committee appointed to prepare a new constitution and by-laws was presented, and after being discussed clause by clause, was slightly amended and passed.

Amended Constitution and By-Laws.

The Constitution and By-laws as amended are as follows:

PREAMBLE.

The object of this Association shall be:

To encourage a general and constant improvement in the breeding and management of cattle by the dissemination of reliable and practical information on the subject; by co-operating with the officers of the various fair associations in encouraging large, attractive and instructive displays of cattle; by holding or assisting in holding a winter exhibition of cattle; by encouraging the keeping of records of pure-bred cattle.

To improve the judging of live stock by presenting to the secretaries of the larger fair associations, and others who may apply for them, carefully prepared lists, giving the names and addresses of parties who are deemed competent to act as judges of the various breeds of cattle.

To instruct and interest the farmers of Canada in cattle husbandry, and to forward the interest of cattle breeders in every honorable way.

CONSTITUTION.

1. This Association shall be called the "Dominion Cattle Breeders' Association."

2. The officers shall consist of a President, a Vice-President, a Secretary-Treasurer, and one director, to represent each of the established breeds. (One director may represent two or more breeds, if members so declare by vote.) In addition to the directors heretofore provided, the Ontario Agricultural College and Experimental Farm may annually nominate one of the staff of said institution as a director of this Association. The President of the Agricultural College is hereby requested to forward the name and address o said nominee to the Secretary of this Association, not later than December 5th of each and every year, and the members of this Association may at each annual meeting declare the aforesaid nominee duly elected.

3. The Executive Committee shall consist of the President, the Vice-President, the Secretary, and one or more of the directors. Said director or directors shall be chosen each year at the first meeting of the officers; and at this or any subsequent meeting of the officers, other committees may be appointed either from among themselves or chosen from among the members of the Association. The members of any committee shall have power to add to their number, when by so doing better work may be accomplished.

4. This Association shall hold a meeting or meetings each year on such date or dates as the Executive may decide.

5. Any person who has not been previously expelled may become a member of this Association by giving or sending his name and address to the Secretary, accompanied by one dollar. The membership fee is one dollar per year.

6. Each member shall be entitled to a free copy of each publication issued by the Association in the year in which he is a member; but shall not be entitled to previous publications.

7. The Association year shall be the calendar year.

8. Each member shall be annually supplied with a badge, which he shall wear when attending meetings of the Association. Only those wearing badges shall be entitled to vote.

BY-LAWS.

Annual Meetings.

9. At the annual meeting each year, the President, Vice-President, and directors shall be elected, also two auditors, and delegates to represent this Association at such fair boards as the meeting by vote decides; expert judges shall also be nominated. The reports of the executive officers shall be received, and such other business transacted as the officers decide.

Duty of the Officers.

President.

10. It shall be the duty of the President to preside at all meetings of the Association, decide all questions of order, and make any suggestion he may deem necessary in the interest of the Association.

Vice-President.

11. It shall be the duty of the Vice-President to aid and assist the President. In the absence of the President, the powers and the duties of the President shall devolve on the Vice-President.

Secretary-Treasurer.

12. It shall be the duty of the Secretary-Treasurer to attend all meetings of the Association, the officers, and the Executive, and keep correct minutes of same; conduct all correspondence, and issue all press and other reports; forward the list of expert judges to the secretaries of the larger fair associations and to others who may apply for them; also prepare for publication the Annual Report. As Treasurer, he shall receive and account for all moneys belonging to the Association; pay all bills and accounts that have been approved of by the Executive. He shall have the power of Managing Director, acting under the control, and with the approval, of the Executive.

13. By virtue of his office, he shall be a member of each committee appointed.

14. Before entering upon the duties of his office, he shall enter into a bond, with security when required, which shall be approved by the Executive Committee.

Officers.

15. The President, Vice-President, Secretary-Treasurer, and directors only, are officers. Persons named as expert judges or delegates to fair boards, etc., are not officers.

16. The officers shall at the first meeting of the Board, and when afterwards necessary, appoint from among themselves or otherwise a Secretary-Treasurer, who shall remain in office during pleasure.

17. Officers shall make such suggestions as they may deem necessary for the benefit of the Association, look after the general interest of the same, and attend to such duties as the Executive may require.

18. At each Annual Meeting the retiring Executive officers shall present a full report of their proceedings, and of the proceedings of the Association, and a detailed statement of the receipts and expenditure for the previous year, and of assets and liabilities; and a copy of said report, a statement of receipts and expenditure, a statement of assets and liabilities, a list of members, and the list of officers elected, and also such general information on matters of special interest to this Association as the officers may have been able to obtain, shall be sent to the Minister of Agriculture within forty days after the holding of such annual meeting.

19. It shall be the duty of the officers to carefully prepare a list of expert judges of the different breeds, and submit same for approval to the annual meeting.

20. It shall be the duty of each officer to support at all times the ruling of the majority, whether at the annual meeting, a meeting of the officers, or an executive meeting, his own opinion to the contrary notwithstanding.

21. No officer shall disclose motions, rulings, names of movers, seconders, etc., provided the meeting rules that such data shall not be made public, nor shall any officer furnish newspaper reports at variance with the official report.

22. The person whose name is placed first on a committee shall be chairman of that committee. It shall be his duty to call the committee together, and to do all in his power to conduct successfully the work for which the committee is appointed.

23. The actual and reasonable expenses of officers when attending Board meetings or Executive meetings shall be paid by this Association. The Secretary-Treasurer is hereby authorized to pay such accounts on receipt of a detailed statement of expenses, accompanied by a voucher for all sums of one dollar and over.

Executive Committee.

24. The Executive Committee shall carry into effect the plan of work decided upon by the officers, and shall arrange the details of the same.

25. In case a vacancy occurs in the offices or directorate, the Executive Committee shall fill said vacancy forthwith.

Quorum.

26.—(1) Not less than seven members shall be a quorum to transact business for the Association; not less than five officers shall be a quorum at an officers' meeting; and not less than three members shall be a quorum at an Executive meeting.

(2) Any member of the Directorate or Executive, not present at a meeting, if he sends his views in writing, shall be considered as present.

(3) The officers or the members of the Executive, or of any committee, may conduct by correspondence the duties assigned to said officers, Executive or committee, by the Constitution or By-laws, or by the Association, when such a course is deemed advisable by said officers, Executive, or committee.

Notice of Meetings.

27. At least two weeks' notice shall be given of each annual or general meeting, naming time and place of meeting. Notice may be given through the public press or by a circular letter mailed to each member.

28. An officers' meeting shall be called by mailing, at least one week before date of meeting, to each officer a notice of meeting as above provided.

29. Similar notice shall be given to each member of the Executive before an Executive meeting is held.

30. An officers' meeting, or an Executive meeting, may be held on shorter notice, provided each officer or Executive officer (if an Executive meeting), is otherwise notified, and consents thereto.

Proxy Votes.

31. A member not present may vote by proxy, but all proxies before being used must be signed by the party represented, and countersigned by the Secretary. Before signing a proxy, the Secretary shall examine the signature affixed. If he believes it to be genuine he shall sign it; if he has reason to doubt its genuineness, he shall require evidence before doing so.

Exhibitions.

32. All animals shown in the pure-bred classes, at Exhibitions controlled by this Association, shall be registered in a reliable Canadian, British or American record.

33 Persons chosen to act as judges of the different breeds of cattle at exhibitions controlled by this Association shall be those recognized by this Association as expert judges of the said breeds.

34. Two expert judges for each class shall be chosen to make awards at exhibitions controlled by this Association; but in case they fail to agree, they shall have power to call in a third person, who must be qualified as specified under section 33. Should the above-mentioned judges fail to agree in the choice of a third, then the executive officers of the exhibition shall select a third person to act as judge.

MISREPRESENTATIONS.

35. The Board of Directors, on being made aware of any fraud having been committed by a member or exhibitor in the entry of any stock or goods in competition for prizes, shall, if they control the exhibition or department, withhold the payment of any prizes that may have been awarded by the judges to said member or exhibitor on such fraudulent or other entries made by any such exhibitor. The money thus withheld shall not remain in the hands of the Association, but prizes shall be awarded as though said exhibitor had not shown Said exhibitor may also be expelled from the Association for a term of four years, and be excluded from exhibiting any stock or goods at exhibitions controlled by this Association for a similar period.

36. To facilitate a redistribution of awards in case any exhibitor should forfeit his prize or prizes, as provided in section 35, there shall be added to each section of the prize list, in addition to the usual cash prizes, the reserve honorary numbers, "highly commended" and "commended."

37. If it is proved to the satisfaction of a majority of the officers and directors of this Association that a member has been guilty of the above-mentioned dishonorable practices at any other exhibition in Canada, has falsified pedigrees, or otherwise dealt unjustly with the public, said member shall be expelled from this Association.

38. Any person who wilfully signs any false pedigree intended for registration in any herd, flock, or stud book, or who presents to the Secretary or other officer having charge of the registry for the purpose of having the same entered therein any false or spurious pedigree, knowing the same to be false or spurious, shall upon summary conviction thereof, upon information to be laid within two years from the commission of the offence before a justice of the peace, be liable to a penalty of not more than $100 and not less than $25, together with the costs of prosecution for each such pedigree so signed or presented as aforesaid by him. (Vict. 58, c. 10, s. 49.)

39. A person convicted by this Association of a dishonorable act shall not be eligible for election to any office or position in the gift of this Association. If elected, the election shall be void.

INSTRUCTIONS TO DELEGATES TO FAIR BOARDS.

40. The following instructions shall govern delegates representing this Association at fair boards:

(1) Every delegate appointed by this Association to attend fair boards shall make it his special duty to attend the important meetings of such fair boards.

(2) It shall be his duty to use every legitimate means within his power to advance the interests of this Association.

(3) It shall be his special duty to advocate and urge upon such fair boards the advisability of introducing and adopting such rules and principles as may be recommended by this Association, his personal opinion to the contrary notwithstanding.

(4) He shall use every reasonable means to have the amount of prizes increased, as the importance of the industry warrants.

(5) He shall report at the next succeeding meeting of this Association the result, as to what he has been able to accomplish or otherwise.

(6) This Association shall defray the actual expense of all such delegates when attending fair boards in its interests; but each delegate must send a written report to the Secretary, setting forth the work accomplished or undertaken by him in the interests of the Association. On receipt of such report, and a detailed statement of expenses, accompanied by vouchers for all sums of one dollar and over, the Secretary-Treasurer is instructed to pay the expenses of such delegate.

41. It shall be the duty of the officers and directors of this Association, parties nominated as expert judges, and delegates to fair boards, to bring to the notice of all fair boards and fair managers, with whom they come into contact, the regulations contained in sections 32, 33, 34, 35, etc., together with the resolutions appended to this section, and to use their utmost influence to have said regulations adopted by said fair boards for the government of their respective exhibitions.

Resolved:—

(1) That it is the opinion of this Association that animals shown in pure-bred classes at exhibitions receiving grants from the Ontario Government, should be recorded in a reliable Canadian, British, or American record.

(2) That, in the opinion of this Association, those persons who act as judges of the different breeds of cattle at above-mentioned exhibitions should be thoroughly familiar with the breed or breeds which they are called upon to judge, and should, moreover, be recognized by this Association as expert judges of said breeds.

(3) That this Association recommends the appointment of two expert judges for each class, as specified under section 34; but, in case this system is not adopted, it would recommend the appointment of one expert judge for each class, in preference to three judges.

42. If an officer, director, or representative of this Association controverts any of the By-laws of this Association, the Executive Committee shall declare the office filled by him vacant, and shall at once appoint a successor.

ADDITIONS AND AMENDMENTS.

43. Any additions or amendments to the Constitution or By-laws shall be presented in writing at a meeting previous to the adoption of the same, and shall require a two-thirds majority of the members present to pass.

ORDER OF BUSINESS.

(1) Reading minutes of previous meeting.
(2) Address and reports of officers.
(3) Reports of committees.
(4) Unfinished business.
(5) New business.
(6) Addresses and discussions.
(7) Opening of question drawer.
(8) Election of officers.
(9) Adjournment.

The above order of business may be replaced by another provided by the President or Executive.

ORDER AT MEETINGS.

(1) Except by permission of the presiding officer, no member or other person shall speak, except to ask a question, or to introduce or speak to a motion.

(2) In the discussion following the introduction of a subject, no person shall speak more than twice, nor for a longer time than five minutes, except by a vote of the meeting.

(3) When a question is under consideration no motion shall be in order, except the following: (1) To adjourn; (2) to postpone; (3) to amend. These motions take precedence in the order named, and the first two shall be decided without debate.

(4) Before the vote is taken on any motion or amendment, the President shall ask, "Is the meeting ready for the question?" The motion shall not be put so long as any member desires to speak and is in order. Any member desirous of asking a question on the subject introduced may do so verbally; but if he desires to ask more than two questions, he must submit them to the Secretary in writing.

The secretary was instructed to have above constitution, etc., printed in pamphlet form and distributed among the cattle breeders of Ontario, which was done without delay.

DIRECTORS.

A director to represent each breed was then elected as follows:

Shorthorns ..... A. Johnston, Greenwood.
Herefords ..... A. Rawlings, Forest.
Polle Angus ..... Wm. Stewart, Lucasville.
Galloways ..... David McCrae, Guelph.
Ayrshires ..... W. W. Ballantyne, Stratford.
Holsteins ..... D. E. Smith, Brampton.
Jerseys ..... J. C. Snell, Snelgrove.
Guernseys ..... C. H. McNish, Lyn.
Devons ..... W. J. Rudd, Eden Mills.
Ontario Agricultural College ..... G. E. Day, Guelph.

The following gentlemen then addressed the meeting: A. Johnston, John I. Hobson, S. H. Todd, Hon. John Dryden. Fourteen of those present joined the Association.

The executive of the Dominion Cattle Breeders' Association met in the Albion Hotel, Toronto, February 12th, 1896, and appointed a committee to interview the Hon. John Dryden, Provincial Minister of Agriculture, regarding a grant to assist the Association to carry on its work. This committee interviewed the Minister at 9 a.m., February 13th, 1896. Among the deputation were the following well known live-stock men: Arthur Johnston, Greenwood; Robert Miller, Brougham; Wm. Linton, Aurora; James Russell, Richmond Hill; John Isaac, Markham; Mr. Biggins, Clinton; James Tolton, Walkerton; Mr. Jeffs, Bondhead; Mr. Pettit, Burlington; Geo. Green, Fairview; John I. Hobson, Mosboro'; Capt. Robson, Ilderton; Mr. Christian, B.S.A., Guelph; C. A. Zavitz, O.A.C., Guelph; Capt. Rolph, Markham; F. W. Hodson, Guelph.

Mr. HOBSON was spokesman for the deputation, and presented the following facts:

The Dominion Cattle Breeders' Association was formed in 1892. Since then annual meetings have been held and much important business has been transacted, but from lack of funds no report has been issued. In April, 1895, a meeting was held in the Rossin

House, Toronto, at which it was decided to re-draft the constitution and by-laws, and put the Association on the same footing as the Dominion Sheep and Swine Breeders' Associations, both of which have accomplished splendid results. The committee appointed to draft the constitution and by-laws reported at a meeting held at the grounds of the Industrial Exhibition Association, Toronto, September, 1895. The new constitution was read and adopted. Since then more than sixty members have been added to the list, among whom are many of the best known cattle breeders in the Province. The object of the Association is set forth in the constitution and by-laws, a copy of which is presented herewith. Heretofore the Agriculture and Arts Association has conducted the cattle department of the winter show, and has each year awarded prizes amounting to $955. If this show is to be continued, the Dominion Cattle Breeders' Association must now take up the work. To keep pace with the times about $300 additional should be added to the prize list and awarded to the dairy breeds. Dairying is rapidly becoming an important industry in this country. The dairy cow is of as much importance to the farmer as the fatted bullock, or perhaps more. The English dairy shows have established beyond a doubt the importance of better education as to the selection and care of the cow. We propose that our dairy show will fill a long felt need in this particular.

In order to carry on this work we will require a grant of $1,500.

Our expenses for 1896 will be as follows, basing our calculation on last year's prize list, a copy of which I hand you :

Beef breeds	$955 00	
Dairy breeds	300 00	
Directors' expenses, postage and stationery, expense of preparing annual report	400 00	
		$1,655 00

Receipts.

Members' fees	$100 00	
Entry fees, fat stock show	100 00	
		200 00
Deficit		$1,455 00

Arthur Johnston followed, and in a very able speech pointed out the great need of a Cattle Breeders' Association in this Province. His arguments were most convincing, and were heartily endorsed by all present.

Robert Miller followed, emphasizing the points made by Mr. Johnston, and especially pointing out the need of united action regarding the unfair manner in which the railroad companies are treating farmers regarding the shipment of cattle, viz. : The said companies charge shippers at the rate of 4,000 pounds on all cattle shipped, and as some animals shipped are calves that perhaps may not weigh 200 pounds, it is a great injustice and an injury to the country, as it prevents the sale of young, pure-bred bulls. If farmers cannot get these on reasonable terms the quality of our cattle must decrease, both among the dairy and beef breeds, which in the end will be a national loss.

Mr. Hodson, Mr. Tolton and others further addressed the Minister, making clear the necessity for the grant.

Dominion Cattle Breeders' Executive Committee Meeting.

The executive officers of the Dominion Cattle Breeders' Association met in the Palmer House, Toronto, at 7.30 p.m., February 13th, 1896, Hon. Thos. Ballantyne in the chair.

F. W. Hodson addressed the meeting, detailing the steps taken to procure a grant from the Ontario Government.

POLLED ANGUS BULL.

John C. Snell, Snelgrove, moved, seconded by Capt. Wm. Rolph, Markham, and resolved: "That a committee be appointed to interview the authorities of the Canadian Pacific Railway and Grand Trunk Railway, and urge upon them the disastrous effects that we believe must result to the cattle industry of this country from the recent changes made by the said companies in the classification of cattle for shipment, singly or in small lots. We believe that in the present depressed condition of agriculture the farmers of this country who require the use of pure-bred bulls cannot stand the additional tax which these changes entail on them. The result will be the use of locally-bred grade and inferior sires, which must ultimately result in deterioration in the quality of the cattle produced for exportation, and thereby greatly endanger the reputation of our cattle in the great markets of the world. Such a condition will surely reduce the number of animals bred and exported. That the same committee interview the Minister of Agriculture of the Dominion regarding the very *grievous quarantine regulations* now existing between Canada and the United States. And that said committee report at our next annual meeting, and that the expenses of these gentlemen be paid by this Association."

On motion it was resolved, "That the next annual meeting be held at 1.30 p.m., on Friday, the 17th day of April, 1896, in Shaftesbury Hall, Queen Street, Toronto."

The secretary was requested to complete the program, and issue it at an early date.

On motion the secretary was instructed to co-operate with the officers of the Dominion Sheep and Swine Breeders' Associations in the erection and maintenance of a tent on the exhibition grounds at London, Toronto and Ottawa, during the time of the respective exhibitions, provided each of said exhibition associations will furnish light, tables and seating accommodation free. Said tent to be placed at the disposal of the live stock breeders and farmers generally as a place of meeting, both as associations or in a private capacity.

Moved by Mr. A. Johnston, seconded by Capt. William Rolph, and resolved, "That the secretary be instructed to co-operate with the executive of the Sheep and Swine Breeders' Association and the Institute System in holding a live stock and institute roundup some time between the 1st and 30th of June, at a point in Eastern Ontario hereafter to be chosen.

As soon as the new constitution and by-laws were accepted I proceded, by letter and otherwise, to canvass for members; sixty-six persons have paid the annual subscription for 1896.

One thousand five hundred copies of our program were printed; 600 of which I mailed to cattle breeders residing in Ontario; 400 copies were sent to publishers of newspapers. In the latter case each programme sent was accompanied by a personal letter pointing out the importance of the meeting and respectfully requesting a free notice. I am glad to state that many of the leading papers, recognizing the importance of our efforts, gave our meeting editorial notice.

To those who are not members I wish to point out the advantages of membership:

Contents of Reports.

Valuable reports containing papers and addresses, written or delivered by the most practical and successful breeders, are issued yearly. In these papers the writers give their experience, with the reasons for their successes and failures; the experience of a life time is thus sometimes summed up in a carefully compiled paper. The discussions, which are printed with the papers, are frequently of greater value than the original paper or address. Experience is a great teacher; twenty years' continuous practice will teach a man many things, and will teach them thoroughly. Is it not evident, then, that if we can know the experience of the oldest and most successful farmers and cattle breeders we will be greatly benefited? To obtain this information, and to give it to the farmers of Canada, is the purpose of this Association.

The Benefit of Contact with other Breeders.

Another important object is to bring the breeders of cattle together once or twice a year in different parts of the Province, that by becoming acquainted one with the other trade may be extended among themselves, and they will also be at these times in a position, as a body, to grapple with questions which affect their interests as breeders. As private individuals, they have little influence with governments, railways or other corporations; as an association, they can make their wants known and felt. Dr. Mills' article, hereafter published, sets forth what has already been accomplished in this respect. The farmers, as a body, compare favorably with other classes of men, professional or otherwise, but, from the nature of their calling, they are more retiring; this condition the Association tends to overcome. Nothing brings a clever farmer to notice and gives him his true place in the commonwealth so readily and naturally as do these associations; and nothing elevates the rank and file of live-stock men so rapidly as contact in association work one with the other. The sheep and swine breeders, individually and collectively, have received untold benefits from this cause alone. We cannot come into close and frequent contact with successful men without being benefited thereby. We learn of their methods and we partake of their enthusiasm, even though not realizing it at the time. Contact with clever and successful men arouses our ambition and makes us better and more successful citizens.

Live Stock Associations in other Countries.

The British, the German, the French, and other European agriculturists, have recognized the value of live-stock associations; so also have the Americans. It is a noticeable fact that the live-stock industries of these nations and of the neighboring States of the American Union correspond with their association life. If a State has strong and well-managed live-stock associations, we find the live stock interests there in a flourishing condition; this was most noticeable at the Chicago World's Fair. Organization and concerted action are necessary everywhere; farmers must act together, if they wish to build up their calling and make it more profitable.

Associations a means of Strength.

All classes of people have their associations: doctors, lawyers, chemists, manufacturers, millers, drovers, etc., etc. These classes have long recognized the value of association work, hence their strength to-day. The complaint is often heard that farmers are not well represented in parliament; that they do not receive the attention their extensive interests deserve; that legislators are slow to recognize their wants—all of which is true. This is, in a great measure, their own fault. Other classes have developed their interests and enforced their demands by strong and well-established associations, which to them have been towers of strength in enabling them to overcome obstacles otherwise unsurmountable. Farmers have neglected this, and are, therefore, behind in the race; but they have men in their ranks capable of filling any position in the gift of the people. Knowledge is power; united effort is strength. These are the indirect benefits obtained from farmers' associations, and they are very great.

Direct Benefits.

The direct benefits are: Each member receives a free copy of all publications issued by the Association in the year in which he is a member. Valuable matter is contained in these reports.

Advertising Advantages.

The name and address of each member, and the breed of stock kept by him, are published in the annual report, thus: "Mr. A. Johnston, Greenwood, Ont., Breeder of Shorthorns." If no other advantage but this were received, the members would be

abundantly repaid for the money expended in the annual membership ticket. There is no other means of advertising so cheap and so effective. A copy of each report issued by this Association is sent, not only to every member in Canada, but also to each member of each Farmers' Institute in Ontario. Many are also sent to leading American farmers, and to the officers of the agricultural colleges and experimental farms throughout America, many of which bind the volumes yearly; nearly all who receive them keep them for future reference. Thus the names of our members are carefully kept before the buying public, and thus they become well known as breeders of the various sorts. No other medium offers equal advertising advantages. The associations also offer the best facilities for making the merits of the different breeds or herds known to the public.

FINANCIAL STATEMENT

of the Dominion Cattle Breeders' Association for the year ending April 1st, 1896.

Receipts.

Membership fees	$66 00

Expenditure.

Expenses for meetings	$ 7 20	
Directors' fees and expenses	13 05	
Postage and stationery	20 00	
Printing	29 25	
Office supplies	16 55	
		$86 05
Balance due Treasurer		$20 05

Examined and found correct.

D. McCrae, James Russell, } Auditors.

F. W. Hodson, Treasurer.

On the motion of Mr. David McCrae, seconded by Mr. Snell, the report was adopted.

Mr. Robert Miller then moved, "That the hearty thanks of this Association be tendered to the press of Canada for the handsome way they have treated the Association in publishing anything they thought would be of interest.

Mr. Dryden: I think the reason the members of the press have done so nobly is because they realize, as perhaps most of us do, that what they are doing for the Association is not merely for individual members but for the country at large. It is true patriotism on their part.

The resolution was seconded by Mr. Russell, and carried unanimously.

TRANSPORTATION OF LIVE STOCK.

By R. Miller, Brougham, Ont.

The recent proposal to increase the rates on small consignments of horses and cattle with which every person connected with the business is familiar, not having been enforced, but little need be said except to point out how necessary it is to take immediate and united action to prevent such injurious action, for which purpose an Association of this kind is so very useful. Had it not been for this and kindred associations promptly pointing out to the railway companies what an injury such action would work to the improvement of the live stock in this country the threatened increase in the rates would, no doubt, have been enforced, but it only fair to say that they were quite willing to go back to the old rates when an explanation was made and they were asked to do so.

No doubt, good will result from this, for the companies now know how necessary the retail trade is to insure to them a larger business in the live stock traffic. It is the common belief that the carrying of single animals does not pay; perhaps it does not directly, but many things have to be done in all kinds of business that do not directly pay, in order that an indirect profit may be gained In this case the resulting gain is so immediate that it is hard to call it indirect. For every single pure-bred animal that is sold, at least four visits are paid to the breeding establishments. That means that four journeys are made in passenger trains and the inevitable ticket has to be procured, such tickets cost at a safe estimate six dollars each, thus a revenue of thirty dollars, including the charges for carrying the animal, accrues to the company. A more indirect, but at the same time certain gain to the railways is made in the carrying of the visitors to such meetings as this, and to all the meetings of the associations representing each breed, which are now so necessary to keep the standard of such breeds on an equality with each other, with the same breeds in other countries and in keeping with the demands of a progressive and exacting age. While we know the necessity of being reasonable in our demands, it might be beneficial to us and to the railway companies to point out that smaller cars would in many cases suit us better, say cars half the ordinary size, that could be carried at half the rate, such an arrangement has been working to good advantage both to shippers and railways in Great Britain for many years. Some accommodation should also be made for feeding and watering stock during transit, the usual way in Canada of unloading to feed causing the rolling stock to lie idle during such feeding, and a great shrinkage in the animals besides, it being well known that the longer the journey takes the greater the shrinkage. In shipping sheep in less than carloads we should have the privilege of doing so at a fair rate by dividing them from any other goods that may be put on the car by a safe partition, crating being both expensive and injurious to the sheep Promptness in furnishing cars is very much needed on some roads. Not very long ago a car of horses had to wait twenty-four hours after collection, when the car had been ordered several days, and this on one of the main lines and not very far from Toronto. Such negligence may cause great loss in the missing of a market, or ship if the animals are for export. Good men should be employed as station agents and they should be allowed to use their judgment in many cases, for it is impossible to print rules enough to advantageously govern every transaction in any business.

Hon. Mr. Dryden: Allow me to say that I think the existence of this Association has already been justified by what has been accomplished in the line taken by the paper just read. Mr. Johnston was right in stating the fact that I have always contended it was a very desirable thing that the persons most deeply interested in the cattle industry should have some kind of an Association to represent their interests. But for this Association, I apprehend you would not so easily have gained the victory as you did in reference to the increased freight charges on stock. It is well enough for any one of you to go and wait upon the railroad officials in your private capacity, but such persons do not carry the weight that they do when they represent an Association such as this. I should like to say in behalf of the railways that it seems quite evident the case had not been thought out in all its bearings by those in authority. From consultation with the gentlemen at

the head of the management, I do not believe that they wanted to injure the trade. They realize that it is not to their interest to do so, but rather to foster the trade; and when it was pointed out that it was going to be a death blow to our stock interests, they immediately charged the regulations I had some communication with both railways, and received nice letters from both, saying that what was in the interest of agriculture was in their interest also. But you cannot properly represent this except through an Association of this kind.

While this matter was attended to so promptly by the railways, yet I feel there are other things that deserve attention as suggested by the paper. These should not be forgotten. This Association should be made a little aggressive in this regard. It is not for the breeders themselves—it is not merely for the men personally interested—but it is for the interests of the country at large. It is not to be wondered at, therefore, that people who have no cattle or sheep at all are interested in our work, because they see that what tends to encourage these industries assists in increasing the wealth of the country. We should not feel at all backward, therefore, in being a little aggressive in seeking to have these matters remedied so far as we are able. If the matter is properly gone about, I believe you will receive a patient and attentive hearing either from the Government or from other institutions that may be interested such as the railway companies, and if you have a fair proposition to make, it will doubtless be adopted, because it is in the interest of Canada to do so.

While we have a quarantine against the Americans, they also have one against us. That was simply tit for tat, and not to keep out disease, for none exist. The only way they could strike at Great Britain, who had scheduled their cattle, was to strike at Canada, one of her colonies. We are seeking to remove the restrictions from pure bred stock on both sides.

The CHAIRMAN: It is only fair to Mr. Dryden to let him know that our work was in no small degree helped by correspondence which he had with the two railway companies. There is no doubt whatever that this correspondence, which took place before we went down, helped to bring about the exceedingly satisfactory result that followed. I do not think we are over estimating if we say that the results obtained through that interview are annually worth more to this country than three, four, or five times the amount of the grant we receive from the Government.

Mr. DRYDEN: If I had any influence in the correspondence the chairman refers to, it was simply because of the position I hold. I was not writing in my private capacity, but as head of the Department of Agriculture. I tried to point out that what I was doing, and what the Government was doing, was in the line of helping the industry, and consequently the railways themselves, and that it was not fair for them to step in and obstruct the trade, and prevent the best cattle from being scattered as widely as possible.

Mr. SNELL: While I quite agree with all that has been said, I think we ought also to give a fair share of the credit to the deputation that went to Montreal in this regard. I know that the chairman did good work in the correspondence he had with the authorities, and others did the same, and I am sure we owe a good deal to them all.

Mr. JOHNSON: The wonder to me is not that the railways attacked our interests at all, but that, in view of the total lack of combination among us and want of effort to obtain justice, they have treated us as generously as they have. We have not been badly treated, but we might have been treated very much better if we had had the means of approaching them and presenting the wishes and interests of the trade. Mr. Bosworth had not the remotest idea that there existed any relationship between our business and their business of carrying steers to the coast. He was astonished when we told him we could stop their business in a year. If they stopped distributing these bulls for us, inside of two years there would not be a single bullock to take across the ocean. He said, "What have you got to do with the bullocks?" He listened attentively while we explained, and finally got it through his head that we had something to do with them. If we had been combined twenty years ago, and had made ourselves felt, it is my opinion that it would not have cost a cent to-day to carry bulls over these railroads. It is in

our power within two years to have every bull carried from coast to coast perfectly free. We do not want to bulldoze anybody, but to get them in such a position that we can wield them in a good cause and in the interests of the country. Some may not be aware that it costs three times as much to ship a bull that is one day over a year old, as it does to ship one that is a day under. If he is a day under the year he pays on 1,000 pounds, but if a day over, on 3,000 pounds. I think we could get that changed. This is a matter I feel some delicacy in speaking about, and perhaps it has a tendency to make people less honest than they would otherwise be, because it sometimes takes a calf a long time to get past twelve months. Another matter I wish to refer to is partitioning cars. In the old country you can have a full car or a half car. There are facilities there for shipping a horse so that it is safer on the cars than in its own stable. There are many lines in which we could exert ourselves with regard to transportation.

Mr. MILLER: I have been asked a good many times as to the action of Mr. Hill, of the Great Northern Railway system, in distributing bulls free throughout their district. Mr. Hill started as a poor boy at Rockwood, Ont. By his bright ideas on every subject, he was enabled to reach the very highest point as a railway manager in America. I think he might be accepted as an authority. His idea of the matter is to carry pure-bred animals even at a small apparent loss, so that they may do good afterwards for the people, and for companies themselves. His idea was that it was not only well for them to carry such animals free, but he went further, for in times of depression, when people were not using enough pure bred stock, he went to England and purchased them by the car load He spent fifty thousand dollars in this way. Backed by his railway, he gives them gratis to the people so that the stock of the country might be improved, and that animals might be produced good enough to ship to the best markets of the world.

Mr. FIGHT said he thought there should be some way of obtaining from the railway companies the overcharges paid.

Mr. DRYDEN: I believe one of the companies at least issued instructions to make this rebate.

Mr. HERBERT WRIGHT: My experience tells me that there should be some influence brought to bear in reference to the employees at different points on the line. The authorities are not aware of the way they treat the people; in some cases they are very negligent and careless, and if you attempt to reproach them, they simply say you are nothing. I acknowledge I am nothing at all to the railway company, but still we have rights. Small lots of live stock are sometimes much abused by shunting and jambing about from station to station.

Mr. HODSON: I think Mr. Johnston said just now that he intended to use his influence to have some grievances redressed which we have been suffering from individually. Now I think if we have anything to complain of it would be much better to have it done through the Association. If Mr. Wright or any one else has a grievance of this kind he should report it to the secretary of the Railway Committee. It would be much better than doing it himself, and it would also aid our Association. Mr. Johnston said he did not think we should continue to ask a grant from the Government. I take very strong ground on the other side. I believe that the live stock men never realize what the country owes them. Some of our men have added hundreds of thousands of dollars to the wealth of this country. The men who build up the country do not die rich, and farmers and live stock men do not make the money due them, and the country ought to be taxed to keep up this Association.

Mr. RUSSELL then moved, seconded by Mr. WRIGHT:

"That while this Association desire to express their appreciation of the courtesy of the authorities of the two great railway companies in conceding to breeders and others the requests of the representatives of the Association, to return to the old estimated weights for animals shipped over their roads, we are of opinion that an estimated weight of 3,000 pounds for a bull between the ages of one and two years is excessive." Carried unanimously.

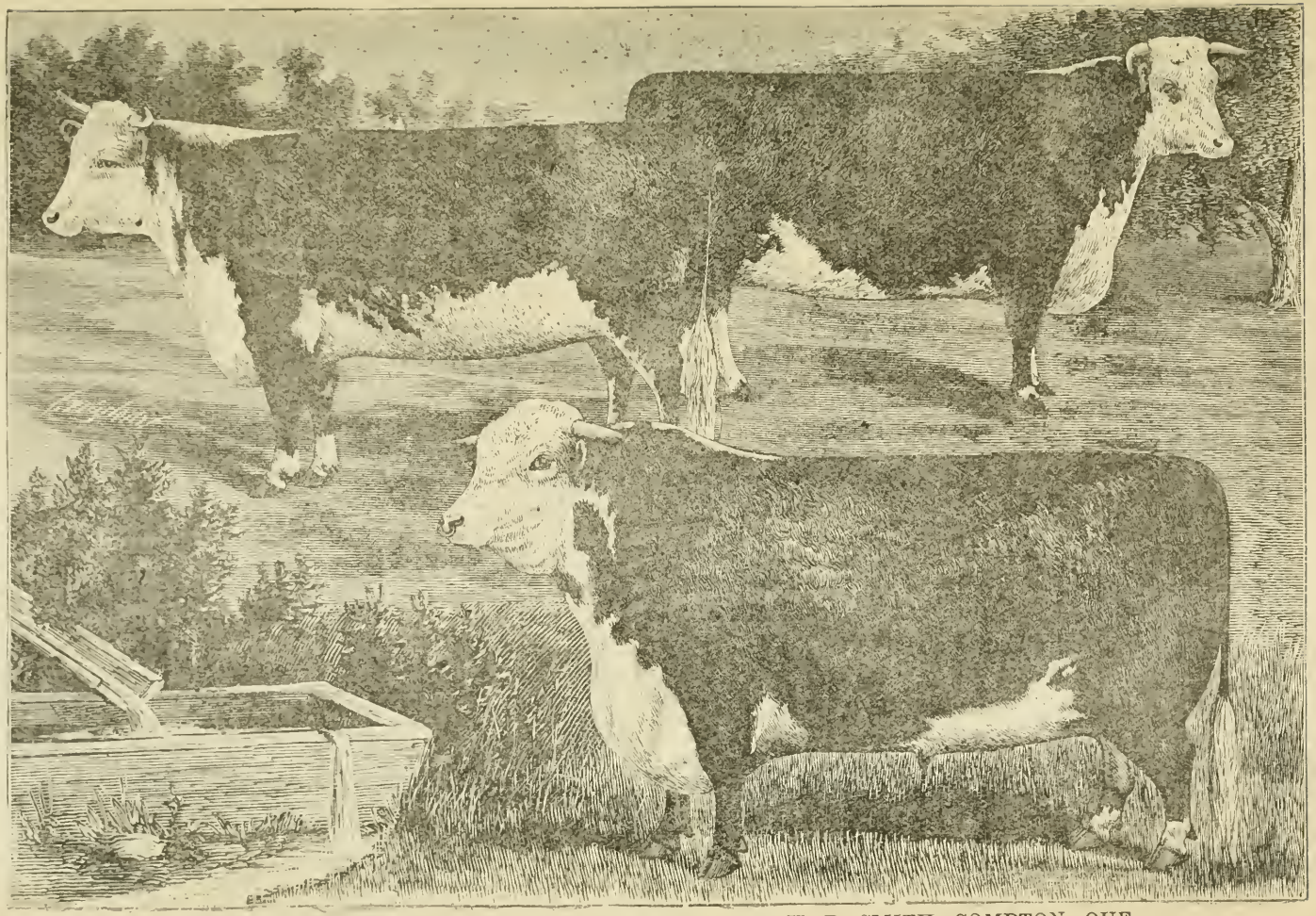
THE PRESENT QUARANTINE REGULATIONS.

Mr. JOHN I. HOBSON, being called upon for an address on the above subject, resigned the chair in favor of Mr. Anderson. He said: This subject of quarantine regulations is one that deserves very serious consideration. I think nearly all breeders and dealers in stock are a unit on it. There has been a growing feeling for some time among the breeders of this country and others who are largely interested in stock, and the reason the movement has not been made more urgent before now is that there has been a hope entertained all along, up to a short time ago, that the restrictive measures carried out by the authorities of Great Britain in preventing the shipping of Canadian cattle would be done away with, and that measures would be taken that would be successful in convincing the authorities in Great Britain that the herds of this country were practically free of disease. Then again, there is another reason, and a very good one, why the movement has not been more strongly urged, that is, that up to a short time ago we had been acting as individual representatives of different associations, as the Ayrshire, Shorthorn, Holstein, etc, and as has already been said this afternoon, an association of this sort which combines all the great stock interests of this country, at all events from the breeders' standpoint, will have a very much greater weight when we come to interview the Government than would representatives from these single associations. These are the two reasons why this movement has not been pushed more in the past. The reason why the quarantine regulations were first imposed between Canada and the United States, was that we might keep the valuable trade we had with Great Britain. We were told that if we expected to send live cattle into the inland markets of England and Scotland, we must quarantine American cattle. The trade being a very valuable one these measures were taken. The reasons we had in passing these regulations no longer hold good; we all feel pretty certain that the prohibitive legislation preventing our cattle going to Great Britain will at all events remain in force for a long time to come. If we can arrange with the American Government to take off their quarantine, there seems to be no reason why we should not also take it off on our side

I think we are all agreed that the cattle of the United States and Canada are practically free from disease. I say so for the reason that if men who are largely interested in the business and have a thorough knowledge of the herds and flocks of this country and the United States are willing to risk doing away with the quarantine, it is pretty good evidence that we have not much to fear.

I have spoken of the regulations between the United States and Canada. To my own mind (and I believe the same view is held by every breeder), the quarantine regulations should also be done away with as regards the importation of cattle from Great Britain. I am not going to trespass upon your time—you all thoroughly understand it as well as I do, but, briefly, I may say that with our restrictive markets for buying and selling, it is not going to be long before we shall drop down from the position we have held in the past as stock breeders. We cannot continue the excellence of our herds unless we have opportunities for regularly and constantly getting fresh importations from the herds of England and Scotland and thus introducing fresh blood. We need not go into the scientific reasons for this, but I may mention one which is very important, and that is that however good our herds may be (I am speaking of the best of them) we know that they are not of that fixed type that may be found in England and Scotland. You take men like Cruickshank, Duthie, Campbell; there you find clever, scientific and noted stockbreeders, who, with their ancestors, have been two or three generations in fixing certain characteristics—types which we know makes their animals exceedingly valuable when introduced into the herds of this country.

Then, on the other hand it is equally important that we should have larger markets to deal with. I am led to understand by those who have a better knowledge of it than I have, that if our stock could be taken to the other side without these prohibitory measures, which really kill the trade, there would at once be a very large demand for the surplus of the herds and flocks of this country.



A GROUP OF HEREFORDS, THE PROPERTY OF MR. H. D. SMITH, COMPTON, QUE.

As secretary of this Committee, I have taken steps to find out the views held by those other than breeders on this question. I have written to some of the most prominent exporters and dealers in this country, but unfortunately I came away from home without the letters I received in reply. I wrote to Messrs. Dunn, than whom there are probably no better authorities in Ontario, regarding export cattle ; to T. O. Robson, of St. Mary's ; to Ald. Crawford, and a number of others, and without any qualifications whatever, they simply say, by all means use all the efforts that may be brought to bear to have these quarantine regulations done away with. The point is this : not only are the breeders very anxious that the restrictive measures should be done away with, but men engaged in other live stock lines, representing various interests, are one with us. If we show that we are acting unitedly, and send a deputation at the proper time to the Government, there is no doubt they will carry out the well known wishes of those representing the great stock interests of this country.

Regarding our visit to Ottawa, I may say that we were appointed a committee to interview the railroad authorities at Montreal on tariff matters and the Government at Ottawa on quarantine regulations. We had thought that during the present session would not be a suitable time to call the attention of the Government to this matter, but being so near Ottawa we thought it wise to make the attempt. Accordingly we had a half-hour's interview with Mr. Foster. We went thoroughly into the matter and we felt that at all events we had succeeded in posting one member of the present Government so that he fully realized the position of matters.

I have dealt with the question in such a way, I think, as to bring before this meeting the leading points, and I think it is well worthy of discussion. (Applause.)

Mr. Snell : I think we owe a great deal to Mr. Hobson, the secretary of the commitee for investigating these matters, for the trouble he has taken in corresponding with parties who are interested and who are authorities on the subject. I take it for granted that we look at this matter from a national and patriotic stand-point, and not merely from personal or selfish motives. It would be a serious matter if we were to agree to take down the bars unless we are sure that it is safe to do so. If there is a possibility of allowing the introduction of contagious disease, it would be a serious matter to the country at large as well as to the breeders.

Mr. Hobson : I think I should have said that we think the quarantine regulations as they at present exist should be done away with, and such modified regulations substituted as may be considered desirable.

Mr. Snell : That alters the matter ; I did not so understand you. If we could be sure we were right and safe, we might go ahead even to the removal of all restructions to trade. But are we sure that the United States has a clean bill of health? We are practically free from disease so far as pleuro- pneumonia is concerned ; but as to tuberculosis, we have reason to believe that it exists to a considerable extent. If we agree to remove the regulations, we should be very careful that there is good veterinary examination to secure us from the liability of introducing disease. I can understand that the breeders of beef breeds of cattle are more interested in opening up that traffic than the breeders of dairy cattle. The most profitable market for the breeders of beef cattle is the United States. With breeders of dairy cattle it would be different, as these cattle are selling at lower prices there than here, and there would be a temptation to speculators to import cheap cattle in order to make money, and these parties would not be as careful as breeders bringing in cattle for their own use would be. We should be careful not only to require veterinary inspection at the port of entry, but also what the American Government requires in regard to sheep and pigs—a clean bill of health from the district from which the animal comes. With such regulations, we should be absolutely safe in agreeing to the removal of the quarantine,

Mr. Johnston : I am not sure that it would be very attractive to the American authorities to set aside their restrictions. I recently bought some cattle at a sale held in Ohio, and I feel sure the trade would not all go one way. I think it is very desirable that there should be an interchange. It is quite contrary to our ideas of correct breeding

to limit the source of supply. If the Americans took some of our cattle, we should also take some of theirs. I am pleased to see that Mr. Snell desired inspection and not the tuberculin test; I should not like to have that.

Mr. HOBSON: I may say that in a letter I received from one of these large dealers, among other things he pointed out as advantages to our stockmen was this, that there would always be a demand for our stockers to go to New York and Pennsylvania, which would go a long way towards removing the glut that now exists in the Toronto and Montreal markets. Mr. Crawford said that for the last few years it has been growing increasingly difficult to get good stockers for those markets.

HON. Mr. DRYDEN: The quarantine was put into force against the United States primarily in order to secure free access for our live stock to Great Britain and secondly, to keep disease out of Canada. Since then two things have happened. I think we are safe in saying that the disease we so much dreaded in the Untted States at that time does not now exist there. Now Great Britain has not only scheduled our cattle, but is passing a bill which means that we are never to be allowed to send any live stock inland at all. So that both the reasons for the quarantine are now taken away, and we come to the question, what is the necessity for continuing it?

Mr. HOBSON: I fear I have not made myself very clear. If I recollect correctly, it it was not Mr. Crawford but T. O. Robson, of St. Marys, and others who spoke of that phase of it. There was no mixing up of duties and quarantine regulations. The way it was put to me is this: If there were no restrictions other than the duty, thousands of light stockers could have been bought the past two years in Toronto and other markets in Ontario for New York State and Pennsylvania, the duty paid, and yet be better value than buying them from western points in their own country.

Mr. DRYDEN: There can be no doubt that if the duty were not too high, quite a trade would frequently be done, should the quarantine be removed. I understand perfectly your point as you now state it, and I agree that our position would be strengthened if it could be shown that a considerable increase in the trade would be brought about by the change. I know there are several here who would have attended some of the sales in the United States but for the quarantine regulations and especially the tuberculin test which has to be applied. When you have bought a valuable animal, supposing you are willing to go through quarantine, you do not know but that the animal will not stand the test and have to be slaughtered, and your money thrown away. I suppose a great many of our people have been disappointed at the result of our endeavors to keep the market open in Great Britain. I think it will be better to have some definite decision arrived at so as to know where we are. At one time we regarded it as possible that we might have free access, but as they have evidently made up their minds that we are not to have it, we must accept the decision. The situation is simply this: Our people must feed their own cattle with their own grain, and send them in a fit condition to be slaughtered when they arrive. But what I specially object to is the manner in which this is being done, and the excuses that are being offered. We are advertised the world over as having diseased cattle—as having pleuro-pneumonia. I fear if you were to undertake to send your cattle to some of the countries spoken of this afternoon, you would be met with the statement: "Your cattle are diseased; it is so stated in England." We know there is no disease here, because no one has been able to find it. It could not exist without being easily seen—it would make its ravages felt. No one has been able to find it, and we are safe in saying that it does not exist. When our sheep began to be exported in considerable numbers, it was not long before it was declared that some of them were affected with scab. They have plenty of scab in England, while we know little of it here; but, finding it at all, that was a sufficent excuse and they were slaughtered. Now they assert that our horses are full of glanders. I think as a loyal man I have a right to protest against such statements. Our people love the mother land and are loyal to her. It does not take much to have every man's breats filled with enthusiasm for the mother country when her dignity is at stake, but one does not like these things said and these excuses made for keeping our live stock out. I have made up my mind, however, that there is no use making any more ado about it. We shall be obliged to accept the situation, and

if so, some effort ought to be made to have the quarantine regulations removed between the United States and this country and between this country and Great Britain, so as to allow our breeders to go where they can to purchase what they need to keep their herds in the highest condition. Every breeder knows that in order to make a success he must have access to a pretty large market. You will probably not sell many bulls within five or ten miles of your door. Right around you where you would expect farmers to take advantage of what you have brought there, they will overlook you entirely. We need to have a large and extended territory. A man in Missouri will discover that Mr Johnston for instance, has something he wants in his herd, and although he might perhaps been supplied much nearer home, he will pass over every one else to secure it. If you destroy the trade by putting these obstacles in the way, you make it impossible to keep up a good herd in this country. After a while you will have destroyed all the better herds, which means you have done away with the benefits that accue from these cattle being distributed in different parts of our own country. If we destroy these herds, then the general product of our cattle will certainly be lessened in value. If there is no disease, there is no reason why the quarantine should be kept up. But we ought not to say that we desire to do away with the regulations altogether; we propose that some amendments should be passed so as to do away the present quarantine. But if disease should break out in any State of the Union, there should still be power given to quarantine immediately. If it should break out, as it may do, in Great Britain, there should be a quarantine against that country. But where there is no disease there is no necessity for quarantine. If it were done away with, every breeder would be given the opportunity to maintain his herd in the best possible condition, which would result in the maintenance of a better class of stock throughout the country generally. (Applause.)

Mr. D. McCrae: I think I can add but little to what the Minister has said. I think it would be unfortunate to take away the quarantine altogether and our power to impose it. We are dealing with the whole of Europe, and from several of the European countries cattle are regularly bought. We believe Great Britain is free from pleuro-pneumonia, but we know that the continent is not, and we should have to consider that in making any changes. At the present time if we buy an animal in England, under the present quarantine regulations, we have to get a certificate of health from that very district,—have the animal inspected and certain papers made out before we can export it. I think these are good regulations to keep up. It is not to the benefit of our breeders to keep up the present regulations, and, in view of the failure to get our cattle into England, the best thing we can do is to have the present quarantine removed. It has been stated by the press that if the present bill passes the British House it is a finality. When I saw that, it occurred to me that the reason for the statement was that the bill has to pass both the Commons and the Lords. We all know what the House of Lords is; if a bill were introduced in the future to take off the restrictions it would never have a chance of passing the House of Lords. Something has been said about the States putting on a quarantine against us. For years we have had a quarantine against the States put on in the interests of Great Britain to keep out pleuro pneumonia, but while we had these restrictions against the States they allowed our cattle for years to come in free, and it was not until England put restrictions on their cattle that they retaliated against us. The market is surely better in the United States than in Canada because it is so much larger. Then it is true, as has been stated, that there are a great many breeders here who would like to avail themselves of the animals owned in different parts of the United States. There would be a beneficial exchange. We see the same thing in horses to day. We have for instance a large consignment of horses sent over to be exhibited at our Horse Show. I think this is a trade that ought to be encouraged, and to take off the restrictions would do much. A word has been spoken about tuberculosis. I think perhaps it would be well if we could get some guarantee when we bring in animals that they are free from that disease. I am not going to discuss tuberculin. While the disease is prevalent in the United States, it is exceedingly common in Europe. It is not a new disease. There was a scare spread through this country a short time ago which was exceedingly exaggerated. There is not the danger to the public health

that is sometimes thought. It is certainly a contagious disase, but we are largely free from it, and I think it would be well to have imported animals free. But it is difficult if not impossible for a veterinary surgeon to take an animal and say that it is diseased, unless it is very far advanced. The flesh may be good for human food until the animal is full of it. The best German scientists bear out this statement. There is no reason why our cattle should be condemned because they show slight traces of the disease. Neither is there the danger there was formerly thought to be from the use of the milk.

Mr. JOHNSTON: I quite believe there is no use protesting against the bill, but I do not think we should cease to publish to the world that we have no pleuro-pneumonia and never had any. In putting this motion I have no hopes of having any effect on the passage of the bill. The truth is, I have always thought it a rather foolish thing to send cattle to Great Britain to be fattened:

"That this Association wish to enter their earnest protest against the publication to the world by the authorities in Great Britain that pluro-pneumonia exists among our cattle, which statement is made without proper investigation of the facts in this country, although our Government has frequently offered to bear the expense of a full investigation of the matter; while we know that the said disease does not exist and that it never has existed in this country."

Mr. DRYDEN: The position they take there, admitting what you say is true, is that they still find the disease when the cattle arrive.

Mr. JOHNSTON: Yes; Mr. Long has on two occasions, I believe, made the assertion that the Government has reason to believe that the disease does exist.

Mr. HODSON: One of the English Ministers said that the Cabinet would not interfere with the restrictions against foreign cattle. This was repeated two or three times. Mr. Chamberlain also made the assertion that, even if preferential trade with the colonies were brought about, still foreign cattle would be excluded from the British market.

Mr. DRYDEN: It ought to be borne in mind that the bill is not against Canada alone but against all countries.

Mr. JOHNSTON: I am aware of that, but I think we should protest that we never had the disease.

Mr. MILLER: If we had been as anxious to stop cattle being imported to this country from Great Britain as they were to exclude ours, we should have had splendid opportunities for doing so long ago. We have ourselves, in common with other breeders, imported cattle that had a certain amount of pleurisy. There might be some in nearly every shipment caused by impure air on the ship, etc. We have imported sheep with scab. And nearly every ship that carries a number of horses have individuals that might well be said to be glandered. We have imported horses that ran poisonous matter from the mouth and nose for months. If we had wanted to exclude these animals, there was plenty of opportunity. It is not a friendly act for Great Britain to say to her daughter that her animals are diseased and unfit to send to her market. It is unfair and unkind, and I do not think we can make the motion too strong by stating that, no matter what disease may exist in other countries of the world, there is no necessity or right to mention Canada in that bill or for restricting Canada from this commerce.

The resolution was then put to the meeting and carried unanimously.

Mr. JOHNSTON said he thought the object of the meeting was to get a market for pure-bred stock. The practical stock breeder knows that there is very little chance of our shipping stock to the South American republics. The only thing that stands in the way of wider markets is the stupid tuberculin test. Quarantine simply means the cost of keeping the animal there, which is really trifling, but they are afraid of the tuberculin test by the Government officials. The United States wants all the pure-bred cattle they can get from this country.

Dr. MILLS: Is the tuberculin test on our side?

Mr. JOHNSTON: Yes.

The CHAIRMAN: It is understood that it is the desire of this meeting that, if the proper time arrives in the opinion of the directors for pushing this matter of doing away with the quarantine regulations, they should go on and do so. Shall we move in this matter?

Mr. DRYDEN: I think the meeting might pass a resolution continuing this committee, and asking them to resume their efforts.

Dr. MILLS: It is understood that this committee should endeavor to have the tuberculin test removed and some other test substituted, such as the one that formerly existed? This is not embraced in the original instructions to the committee, but the members feel very strongly on that.

Mr. JOHNSTON: That came up before Mr. Bowell, and I think I am right in stating that he acquiesced in our opinion.

Mr. DRYDEN: The statement has been freely made in Europe that, no matter how bad the disease exists in a herd, it can be completely eradicated in a few years by taking the proper precautions, such as isolating affected animals, not allowing calves from affected animals to nurse on their dams, proper ventilation, etc. Mr. Spiers, one of the farmer delegates to this country, mentioned an instance not long ago where a man who had a badly diseased herd succeeded in getting completely free from it in this way.

Mr. SNELL: I think it would be well to have a resolution of instruction to the committee.

The following resolutions were then carried:

"That the Committee on Legislation be instructed to take such steps as may be necessary to have the present tuberculin test on animals imported to this country removed."

"That this Association of cattle breeders have never known of a case of pleuro-pneumonia among Canadian herds."

TRANSPORTATION OF LIVE STOCK.

By D. G. HANMER, BURFORD, ONT.

The disadvantages which breeders and shippers of sheep and swine have to contend with on account of arbitrary railway rules and excessive local freight charges are fairly well known. According to classification No. 9, now in force, sheep and swine shipped in less than car load lots must be crated, when a double first-class rate is charged; if special permission is granted to ship without crating, the same rate is sometimes charged. In order to show the difference in rates, I will undertake to ship ten sheep, say fifty miles. If shipped without crating, and car load rates charged, which is sometimes done on small lots, the cost would be $18; if crated, a double first-class rate would be charged, and supposing each sheep, including crate, to weigh 200 pounds, the cost would be $10.40, cost of crates, $8; total, $18.40. Now, if we were allowed to pen those sheep in one end of a car and ship at a single first-class rate, it would just cost $5.72, or about one-third, and the railway company would suffer no inconvenience, as the balance of the car could be used for other freight. To show in what way the rules and rates now in force tell against the breeder, and, I think, sometimes against the railway companies, I will give an instance that came to my notice in the fall of 1895. A breeder near Ottawa, being anxious to sell twenty-four sheep, undertook to deliver them at Galt at so much per head, but found, to his surprise, it would cost $72 to get them delivered. The result was the sale of the sheep was lost, and also the freight the railway company might have received had their charges been more reasonable. We do not ask that our animals be shipped free, neither do we ask that they should be shipped at unreasonably low rates; but we think the rules for shipping and freight rates should be made uniform, and that we should be allowed to make local shipments in less than car load lots by penning in car and at single first-class rates, and in making up car loads for through shipment one lay-off, if required, should be granted without extra charge, as at present. The flocks and herds in the Provinces are generally kept in small numbers, and are somewhat scattered, making it sometimes difficult to get a car load together for export, and the railway companies,

instead of encouraging a business from which they are receiving a large revenue, are continually placing difficulties in the way. There is no doubt that considerably more business might be done in the North-West with a better class of stock were it not that breeders are subjected to outrageous rates for carrying stock over the C. P. R. It is encouraging, however, to know that through the efforts put forth by our live stock associations, some of the difficulties in the way of shipping live stock have been removed, and we hope by continued efforts other concessions will be made that will have a tendency to increase the live stock industry of the country.

Referring to the question of quarantine, I see no reason why it should be maintained. It causes vexatious delay, is expensive and serves no good purpose. After a long ocean voyage large numbers of sheep are confined in small space, and often come out of quarantine in worse shape than when they went in. If, after thorough veterinary inspection, stock is found to be in a healthy condition, the animals should be allowed to pass at once to their destination. Present indications seem to point to the fact that it is useless for us to maintain an expensive quarantine in the hope of getting our live stock to the British market. We should, therefore, by relaxing or doing away with our present quarantine laws, endeavor to cultivate a more extensive trade with our neighbors across the lines.

The CHAIRMAN: I think we must all agree with the way Mr. Hanmer put the case. There is scarcely any need to discuss it, and so we will proceed with the election of officers.

ELECTION OF OFFICERS.

The election of officers was then proceeded with, and resulted as given on page 2.

ADDRESS BY HIS HONOR THE LIEUTENANT-GOVERNOR OF ONTARIO.

After being introduced to the meeting, His Honor said: I feel very pleased to come here and welcome the members of this Association. I must say, however, that I was not aware until this morning that you expected an address from me. I think it would be very foolish for me to come here and address you gentlemen, who are experts on the matter of cattle breeding. I come only to speak a few words of welcome and to tell you of the interest the people of the country take in the questions you discuss. I, of course, have not the opportunity of learning the principles of cattle breeding. The good Government that takes care of the Lieutenant-Governor does not supply him with stables, barns, herds, etc., wherewith to try experiments. Perhaps if they did I might be able to pay the expenses of Government House (laughter), and so it would disappear from the estimates. Or perhaps public opinion may change and a summer residence be provided for the Lieutenant-Governor. If so, I should like to be placed near Dr. Mills, at Guelph, where I might study the principles of agriculture. Or perhaps I might be sent by the Minister of Agriculture to Wabigoon Farm to experiment there. (Laughter.) But, to be serious, one cannot but feel a great interest in this Association of Dominion Cattle Breeders. All you have to do is to look at the statistics of our exports from this Dominion since its inception, and one item that will astonish you more than any other is the large increase in the export of animals and animal products. The trade has grown from five or six million dollars a year to thirty-two million dollars, and now heads the list of our exports, and to such men as I see before me, as members of this Association, the credit is largely due. Some of these items have increased at a very great ratio—notably cheese. Cheese has increased so enormously that we are receiving a very handsome amount from this export, and we have the satisfaction of knowing that of the cheese imported to the United Kingdom, Canada sends fifty per cent. This has been done by education and improving the system, and the same thing can be done in other branches. There is no reason why we should not send more ham and bacon than we do. They import no less than five hundred and forty million pounds, and of that amount Canada sends only about thirty-three million pounds. Why should we not increase that trade?

Then as regards butter. It used to be supposed that we could not send butter, and yet we find that Australasia sends thirty-two million pounds, while Canada sends only three millions two hundred thousand pounds, which is altogether out of proportion. If more attention were given to these matters, I have no doubt an improvement would be notable in a few years.

One thing particularly strikes me in connection with the dairy business, and that is that in England a cow must produce 400 gallons of milk per year as against 270 or 280 in Canada. This is not as it ought to be If we could increase it by thirty per cent. it would mean a largely increased revenue for our farmers. I am glad to know that the Minister of Agriculture, and all interested in agriculture, are doing a good deal to educate the farmers to get the best return from their cows. We have been proceeding on the old lines just as when, not very many years ago, all means of communication were shut off in the autumn. But now the circumstances have changed, and the means of transportation have changed, but a good many still allow their cows to go dry six months of the year. I see no reason why, with good barns, where cattle are warm, well housed and well fed, they should not give milk for ten months in the year just as I understand they do in England, and so add largely to your revenue. I look every year with the greatest of interest to see what the average return for a cow is.

I am sure you are all proud of the exhibit going on to-day among the horse breeders, which must be of great value to the country. It shows that we can grow good horses here in Canada. The record of Canadian horses that have been shipped south shows that they are strong and hardy, and they always command a good price in the New York market. That is due largely to our climate, for horses are just like men who are grown in a hardy climate—they will hold their own wherever they go.

There is no doubt our cattle interest will suffer a rebuff in the mother country, owing to the exclusion of all cattle from abroad. But I am inclined to look on that as some benefit. Instead of sending store cattle we shall feed them here, and so our farmers will derive the benefit that our Scotch brethren have been wont to get. If our farmers would fatten them here they would get the benefit that accrues to the farm therefrom, and I hope it may prove a blessing in disguise

I am sure you will take kindly from me these few imperfect remarks, knowing that they are only the impressions of an observant outsider, who is anxious that the great agricultural interests of this country should succeed and prosper, among which your branch is one of the largest, and as such demands a great amount of sympathy. I hope your Association will have abundant success in all it may undertake to do to further those interests. I believe there is no country where the agriculturists are better off than here, although they have a hard enough time here; but it is worse in other countries. I believe there is a better day dawning, due largely to the efforts of the Agricultural Department and of associations such as this to educate the farmers in improved methods. I thank you for your kind attention. (Applause.)

Dr. Mills: I should like to place on record the appreciation felt by this Association of the presence of His Honor, and to assure him of our recognition of the active interest he takes. I have been pleased to see the interest His Honor has taken in the welfare of the agricultural classes, as shown by the time he has spent in company with Hon. Mr. Dryden in visiting our fall fairs, and I think the time was well spent. Whatever criticism there may be as to the expense of Government House, we know that His Honor is very popular in this country.

After a vote of thanks had been passed, expressing appreciation of His Honor's presence and address, the meeting adjourned.

DIRECTORS' MEETING.

A directors' meeting was held in the Palmer House, Toronto, at 7.30 p. m., April 17th. The committees were appointed for the ensuing year. See page 2.

REPORT OF THE TRANSPORTATION AND QUARANTINE COMMITTEE.

At the annual meeting of the Dominion Cattle Breeders' Association, held in Shaftesbury Hall, Toronto, April 17th, 1896, Messrs. J. I. Hobson, Mosborough; J. C. Snell, Snelgrove; Robert Millar, Brougham, and Arthur Johnston, Greenwood, were appointed a committee to interview representatives from the C. P. R., and from the G. T. R., with the view of trying to obtain more satisfactory rates from the companies in the matter of the shipment of breeding stock, and also to endeavor to secure the modification of certain rules which were considered by the breeders to be arbitrary and unjust. At a meeting of the executive held the same evening, Mr. D. G. Hanmer, Mount Vernon, was added to the committee to represent the Sheep Breeders' Association. The same committee was also instructed to take such steps as they thought best to bring to the notice of the Dominion Government the importance of making an effort to arrange with authorities of the United States to either abolish the existing quarantine regulations, or have them so modified as to enable trade to be carried on in such a way as was found in former years to be highly beneficial to both countries; and further, to bring before the Government the importance of so altering the regulations bearing on the importation of cattle from Great Britain, as would enable the breeders of Canada to obtain, as formerly, animals from the best herds in England and Scotland, without having to run risks that make the business of importing practically prohibitive.

Mr. John I. Hobson was appointed secretary of the committee, and was instructed to try and arrange a meeting with the traffic managers of the two roads, and with the Government at an early date. Dealing first with the question of railroad rates and other matters connected with the shipment of stock, we may say, that after a great deal of correspondence, we finally had a meeting in Montreal with Traffic Managers Reeves, of the G. T. R., and Bosworth, of the C. P. R. The following members of the committee formed the deputation which went to Montreal, and from there to Ottawa: Arthur Johnston, Robert Millar and John I. Hobson—the other two members being unable to join us. At this meeting, which took place on the 26th of March, the question of rates was taken up and discussed in all its bearings, as it affected the shipper, the stock interests of the country, and the railroads. Besides this (the main question to be dealt with), there were also other matters of more or less importance, as they affected the shippers of stock and railroads, which were fully gone into. Among the most important was the arbitrary rule making it compulsory to send a man in attendance with an animal or animals when the distance was one hundred miles or over, and requiring fare to be paid one way. Then, also, a matter of no small importance to shippers, the charging of five dollars every time the car had to be shunted to take on an animal. The result of the meeting, as far as the interests we represented were concerned, was highly satisfactory, the companies agreeing through their representatives to restore the rates which had been in force previous to the first of January, 1896; and we were further led to understand that it would not be made compulsory to send an attendant as above referred to, and that the charge of five dollars would not in ordinary cases be collected. We are sorry, however, to have to report that the rule formerly in force requiring an attendant has again been made compulsory. We would like to add that we had much reason to feel satisfied at the outcome of our interviews with the gentlemen representing the railroads, and it was pleasing to find that they were desirous to discuss the questions at issue in all their bearings, and apparently were quite willing to place the business on a fair and equitable basis.

Quarantine.

The same evening, after getting through with our railroad business, we left for Ottawa. The following day we put ourselves in communication with the Hon. Mr. Foster, acting Minister of Agriculture, and other prominent members of the House.

Before speaking of our interviews with the above named gentlemen, it might be well to say that the committee, realizing that to be successful in inducing the Government to move in the matter, it would be necessary to show that not only were the breeders of pure

bred stock anxious to have the quarantine restrictions removed or modified, but as well to be in a position to demonstrate that the other great stock interests of this country would be benefited, and that the most prominent dealers in export cattle, as well as those engaged in the local cattle trade, were quite as anxious as ourselves to have the barriers affecting the cattle trade between Canada and the United States removed. With this end in view, many of the prominent shippers of export cattle, as well as our leading commission men and general dealers, were written to and replies received. Others were seen personally and their views taken down in writing. In every case they were strongly of the opinion that if the desired change could be brought about it would be very beneficial to the interests of this country. As it would make the report unnecessarily long to embody all the replies received or the opinions given, we will just deal with a few of them. The Messrs. Dunn, of Toronto, the extensive exporters, write as follows :

"Toronto, April 17th, 1896.

"Dear Sir,—In answer to your favor of the 15th inst. asking my opinion as to the advisability of getting the quarantine restrictions removed between Canada and the United States as it now applies to our cattle, I assure you I am in sympathy with the movement, and think it would be a great benefit to the cattle trade.

(Signed) "John Dunn."

Thomas Crawford, M.P.P., doing a large commission business, and one of the best posted men in the trade in this country, deals with a very important feature of this question, showing in an unmistakeable way how the measures now in force, which practically prevent the importation of cattle and the infusion of new blood from the herds of England and Scotland, are affecting the general stock of the country. It may here be said, however, that it is not the quarantine of British cattle the importers of high class stock in this country object to, but to the so-called tuberculosis test on this side. The owners of first-class stock in Great Brstain are not going to send their high priced cattle out here and submit to any such test—a test which would often be made after a rough sea voyage when the cattle would be in a highly fevered state ; nor will those on this side who are anxious to import, and who are prepared to pay high prices for first-class animals to improve their herds, run the great pecuniary risk which would have to be borne. Hence, year by year first-class bulls of the beefing breeds are becoming noticeably fewer, and the state of affairs referred to in Mr. Crawford's letter, is becoming more apparent all over the country. This letter is worthy of much consideration :

"Toronto, February 17th, 1896.

"Dear Sir,—I received your letter of to-day. I am pleased to find the breeders of this country are moving in the matter of quarantine regulations. Now as expressed by you, what effect this would have from the cattle business standpoint, I want to say that it would have a most beneficial effect, if you manage to have it removed. It is known to men engaged in the cattle business that our stock is not so breedy as it was some years ago, and the last three years, nice, thrifty, breedy stockers, for feeding purposes, have been more difficult to get, and this year more difficult to get than ever before. For this reason the quarantine restrictions should be modified or removed so that an opportunity will be given to import some of the right sort of stock, that we may have the good breedy stockers which will be profitable to the feeder and also to the shipper, and which will command the best prices, both in our home markets and those of Great Britain.

(Signed) "Thomas Crawford."

I will just quote the views of one more gentleman, Mr. T. O. Robson, of St. Marys. Mr. Robson is one of the most extensive operators and one of the shrewdest men in the business. At a personal interview, after giving a number of reasons why he considered a strong effort should be made to try and get the Government to move in the matter, he went on to say, that if the restrictions were removed one of the advantages unquestionably would be that a great many of our lighter cattle would be bought as stockers by the feeders of Pennsylvania and New York states. For that purpose they are much better liked than the stockers which are bought in Michigan, and would be taken in very large numbers, although duty would have to be paid. Many of the readers of this report will have noticed that a large number were actually bought in Toronto the early part of this season, by an extensive feeder in New York state, the American Government allowing the purchaser to quarantine them on his own farm.

Going back to our interview with the Government: It was quite satisfactory as far as it went. The question was pretty fully discussed and it was quite evident that it had been well thought out by the members present at the interview; and the opinion was unanimously expressed that it would be in the best interests of the stock business of this country, if what we aimed at could be brought about. However, it is needless to say, that owing to the peculiar state of the political atmosphere at that time, no opportunity was given to move actively in the matter, and that it rests with the incoming Government to deal with the question.

(Signed) "JOHN I. HOBSON,
"For the Committee."

SEVENTH ANNUAL REPORT

OF THE

DOMINION SWINE BREEDERS' ASSOCIATION,

1895-6.

To the Honorable the Minister of Agriculture:

I have the honor to submit herewith the Annual Report of the Dominion Swine Breeders' Association.

Your obedient servant,

F. W. HODSON,
Secretary.

LIST OF OFFICERS FOR 1896.

President ..... J. E. Brethour, Burford.
Vice-President ..... George Green, Fairview
Secretary-Treasurer ..... F. W. Hodson, Guelph.

Directors :

Yorkshires ..... G. B. Hood, Guelph.
Berkshires ..... Thomas Teasdale, Concord.
Suffolks ..... R. Dorsey, Burnhamthorpe.
Chester Whites ..... R. H. Harding, Thorndale.
Poland Chinas ..... Wm. Jones, Mt. Elgin.
Essex ..... Joseph Featherston, M.P., Streetsville.
Tamworths ..... Andrew Elliot, Galt.
Duroc Jerseys ..... W. E. Butler, Dereham Centre.

General Director ..... J. C. Snell, Snelgrove.
Auditors ..... John I. Hobson, Mosboro'. R. Snell, Snelgrove.

DELEGATES TO FAIR BOARDS.

Toronto Industrial ..... Thomas Teasdale, Concord ; J. E. Brethour, Burford.
Ottawa ..... Joseph Featherston, M.P., Streetsville ; Joseph Yuill, Carleton Place.
Kingston ..... J. M. Hurley, Belleville ; B. H. Frink, Napanee.
Belleville ..... J. M. Hurley, Belleville.
Montreal ..... Geoffrey Beaudet, Valleyfield, Que ; William Tait, St. Laurent, Que.
Peterboro' ..... R. Vance, Ida.
Guelph ..... G. B. Hood, Guelph ; James Anderson, Guelph.
London ..... George Green, Fairview ; R. H. Harding, Thorndale.

EXPERT JUDGES.

Berkshires : W. A. Graham, Parkhill ; E. E. Martin, Canning ; H. J. Davis, Woodstock ; J. C. Snell, Snelgrove ; Thos. Teasdale, Concord ; Jas. Main, Milton ; Geo. Green, Fairview ; Thos. Wilkinson, Hamilton ; R. T. Lang, Oak Lake, Man. ; Elias Leatherdale, Morden, Man. ; Robt. Vance, Ida ; A. Johnson, Greenwood ; T. A. Cox, Brantford ; Jas. Quirie, Delaware ; Jas. Elder, Virden, Man ; R. Dorsey, Burnhamthorpe ; Jos. Featherston, Streetsville ; S. Coxworth, Whitby ; R. P. Snell, Snelgrove ; Malcolm McArthur, Lobo.

Yorkshires : Sharpe Butterfield, Windsor ; J. E. Brethour, Burford ; G. B. Hood, Guelph ; Jos. Featherston, M.P., Streetsville ; G. A. Gilroy, Glen Buell ; H. E. Sharpe, Ida ; A. F. McGill, Hillsburg ; J. G. Mair, Howick, Que ; G. Beaudet, Valleyfield, Que. ; J. Y. Ormsby, Toronto ; J. M. Hurley, Belleville ; Geo. Gier, Grand Valley ; R. H. Harding, Thorndale ; H. C. Eyre, Harlem ; James Stephens, Trout River, Quebec.

Chester Whites : J. E. Brethour, Burford ; Geo. Green, Fairview ; J. C. Snell, Snelgrove ; W. Jones, Mt. Elgin ; R. H. Harding, Thorndale ; R. Dorsey, Burnhamthorpe ; D. DeCoursey, Bornholm.

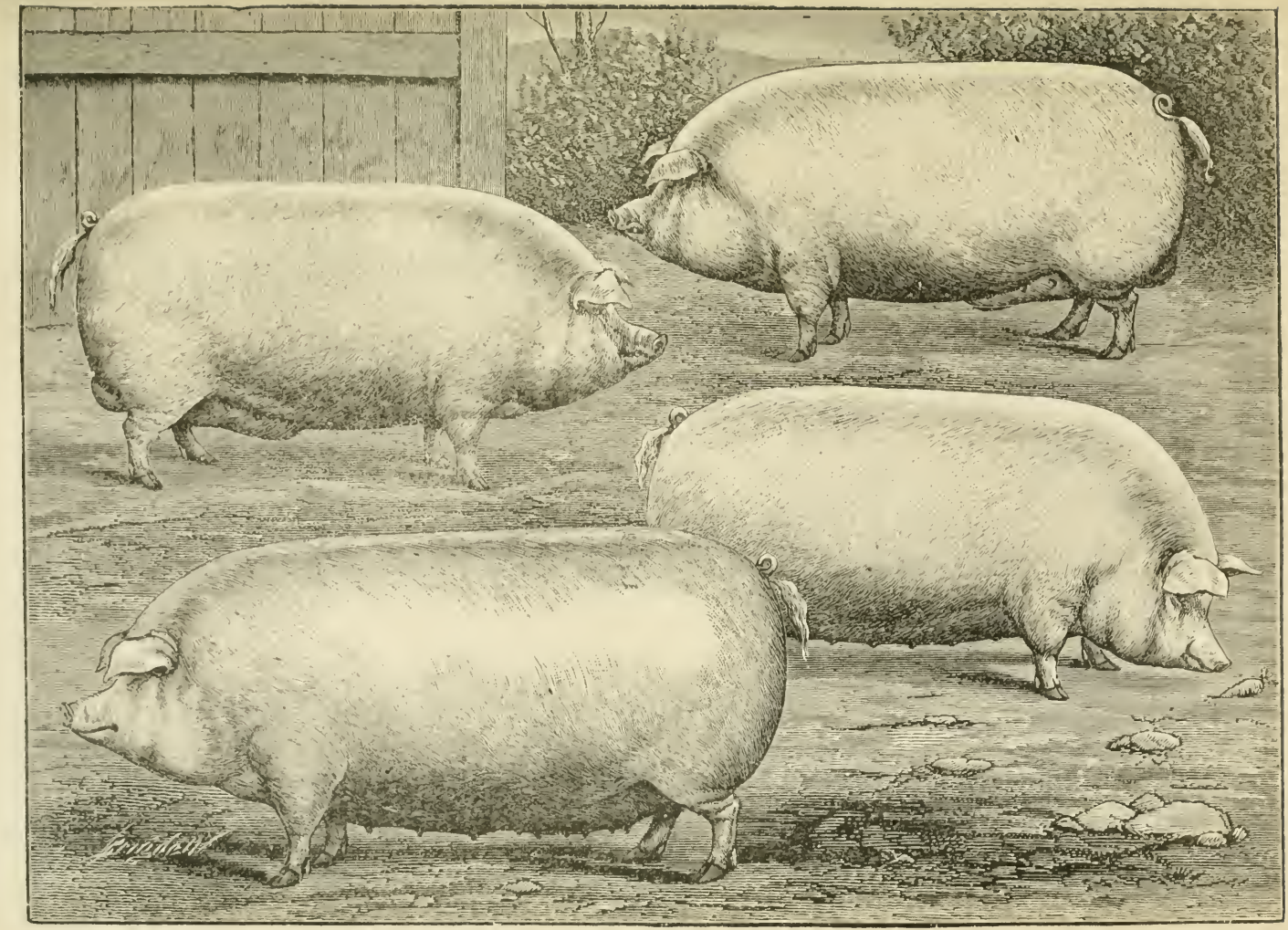
Poland Chinas : Jas. Main, Milton ; J. E. Brethour, Burford ; Sharpe Butterfield, Windsor ; S. H. Todd, Wakeman, Ohio ; Thos. Teasdale, Concord ; Jos. Featherston, M.P., Streetsville ; Geo. Green, Fairview ; R. Dorsey, Burnhamthorpe ; H. Snarey, Croton.

Duroc Jerseys : Jos. Featherston, M.P., Streetsville ; Peter Lamarsh, Wheatley ; W. Jones, Mt. Elgin ; R. Dorsey, Burnhamthorpe ; J. G. Snell, Snelgrove.

Tamworths : Andrew Elliot, Galt ; J. F. Master, New Dundee ; A. C. Hallman, New Dundee ; Frank Sharpe, London ; Jno. Bell, Amber ; D. D. Hammer, Burford ; Jno. Nicol, Hubrey ; J. E. Brethour, Burford ; Caldwell Bros., Orchard ; J. S. Revell, Putnam ; Walter Elliot, Hamilton ; H. H. Freeman, Hamilton ; A. Elliot, Pond Mills.

Essex : Geo. Green, Fairview ; Jas. Main, Milton ; J. C. Snell, Snelgrove ; Jas. Anderson, Guelph ; Sharpe Butterfield, Windsor.

Suffolks : Geo. Green, Fairview ; Robt. Vance, Ida ; Sharpe Butterffeld, Windsor ; John Thompson, Uxbridge ; John Groat, Snelgrove ; Malcolm McArthur, Lobo ; Simon Lemon, Kettleby.



SWEEPSTAKE HERD OF OHIO IMPROVED CHESTER WHITES—TORONTO AND MONTREAL; ALSO WINNERS OF DIPLOMA IN OTTAWA IN 1894 AND 1895.

BRED BY WILLIAM BUTLER & SONS, DEREHAM CENTRE, ONT.

LIST OF MEMBERS OF THE SWINE BREEDERS ASSOCIATION FOR 1895 AND 1896.

Name.	Address.	Class.
Anstice, Chas.	Springford, Ont	Chester Whites.
Anderson, A. Y	Wyoming, Ont	Berkshires.
Ackland, John	Delaware, Ont	Berkshires.
Bonnycastle, F. & Son	Campbellford, Ont	Berkshires.
Blain, Norman M	St George, Ont	Tamworths.
Berden & McNeil	Strathburn, Ont	Duroc Jerseys.
Brown, R. M	Cowansville, Que	Chester Whites.
Bell, John	Amber, Ont	Tamworths.
Blais, A. & J	Glen Sandfield, Ont	Yorkshires.
Bryant, J. D	Young, B. C	Berkshires.
Baker, Jos	Littlewood, Ont	Berkshires.
Bray, James	Longburn, Man	Yorkshires.
Burgess, R. L.	Burgessville, Ont	Berkshires.
Brownridge, J. F	Ashgrove, Ont	Tamworths.
Bowman, W. B.	Mount Forest, Ont	Berkshires.
Brethour, J. E	Burford, Ont	Yorkshires.
Bow Park Co. (Ltd.)	Brantford, Ont	Yorkshires.
Bennett, Geo	Charing Cross, Ont	Chester Whites.
Brown, F. W.	Portage La Prairie, Man	Berkshires.
Bennett, H. & J.	Athol, Ont	Berkshires.
Bate, L. W & Son	Brighton, Ont	Poland Chinas.
Bennett, Jos	South Buxton, Ont	Chester Whites.
Brown Bros.	Springville, Ont.	Berkshires.
Brownlee, Jos.	Shawville, Que	Poland Chinas.
Bennett, H. & Sons	St. Williams, Ont	Yorkshires.
Beingessner, F. X.	Mildmay, Ont	Chester Whites.
Butler, Wm. & Son	Dereham Centre, Ont	Duroc Jerseys and Chester
Boynton, P. W	Dollar, Ont	Berkshires. [Whites.
Berrigan, John	Charlottetown, P. E. I.	Yorkshires.
Bond, S. J	Mount Brydges, Ont	Berkshires.
Brien, Ed	Ridgetown, Ont	Berkshires.
Booth, J. R	City View, Ont.	Berkshires.
Barber, Frank J	Georgetown, Ont	Duroc Jerseys.
Cook, J. W	Marmora, Ont.	Yorkshires.
Cressman, Israel	New Dundee, Ont	Berkshires.
Casin, D. C. & Son	Port Elgin, Ont	Poland Chinas.
Chalk, J. H	Calton, Ont	Chester Whites.
Coxworth, S.	Whitby, Ont	Berkshires.
Calvert, Jas.	Thedford, Ont	Tamworths.
Cairns, Jos	Camlachie, Ont.	Chester Whites.
Clark, J. G	Ottawa, Ont.	Yorkshires.
Chute, H. J.	Somerset, N. S	Chester Whites.
Cousins, John & Son	Harriston, Ont	Yorkshires.
Common, Andrew	Bradwardine, Man	Berkshires.
Cornish John	Orchardville, Ont.	Yorkshires.
Cox, T. A.	Brantford, Ont	Berkshires.
Clark, Wm.	North Wiltshire, P. E. I	Yorkshires.
Curtis, A. E.	Stanstead, Que	Chester Whites.
Caverley, Ed	Sine, Ont	Berkshires.
Campbell, D. & Son	St. Thomas, Ont	Berkshires.
Cosby, Eli B	Winslow, Ont	Yorkshires.
Cooney, E. B	Laurel, Ont	Yorkshires.
Capes, Henry	Aberarder, Ont.	Poland Chinas.
Chaplow, Mr	St. Thomas, Ont	Chester Whites.
Clifford, Frank	Wellington, Ohio	Yorkshires.
Cline, W. W	Appleby, Ont	Yorkshires.
Carter, E. H	Portage La Prairie, Man.	Tamworths.

LIST OF MEMBERS OF SWINE BREEDERS' ASSOCIATION.—*Continued.*

Name.	Address.	Class.
Cherry, John	Nobleton, Ont	Tamworths.
Conroy, R. & W	Deschenes, Que	Tamworths.
Cochran, A	Almonte, Ont	Berkshires.
Caldwell, Bros	Orchard, Ont	Tamworths.
Chinnick, Jas. & Ed	Chatham, Ont	Berkshires.
Dool, E	Hartington, Ont	Berkshires.
DeCoursey, Daniel	Bornholm, Ont	Chester Whites.
Dorrance, Jas	Seaforth, Ont	Berkshires and Yorkshires.
Dyment, S	Barrie, Ont	Berkshires.
Dorsey, R	Burnhamthorpe, Ont	Suffolks and Yorkshires.
Dyer, J E	Enfield, Ont	Tamworths.
Drake, S. F	Pownal, P. E. I	Chester Whites.
Dunn, A	Ingersoll, Ont	Tamworths.
Demeray, Chas	Strathroy, Ont	Yorkshires.
Duthie, Jas	Melgund, Man	Berkshires.
Darling, L. A	Morganston, Ont	Yorkshires.
Day, N	Powie's Corners, Ont	Yorkshires.
Doe, Chas. C	South Newbury, Vt	Tamworths.
Decker, C. R	Chesterfield, Ont	Berkshires.
Dowdle, Samuel	Balder, Man	Berkshires.
Duncan, G. L	Morganstown, Ont	Tamworths.
Drury, Oliver	Fargo, Ont	Poland Chinas.
Davis, H J	Woodstock, Ont	Berkshires and Tamworths.
Dickinson, Wm	Mildmay, Ont	Berkshires.
Dale, John	Glendale, Ont	Chester Whites.
Dedels, Henry	Kossuth, Ont	Yorkshires.
Dawson, Fred	Collingwood, Ont	Berkshires.
Dryden, Hon. John	Toronto, Ont	
Elder, Jas	Virden, Man	Berkshires.
Ewing, J. B	Dartford, Ont	Berkshires.
Edwards, Edwin	North Wiltshire, P. E. I	Yorkshires.
Edwards, W. C. & Co	Rockland, Ont	Berkshires.
Evoy, W. H. & Son	Bar River, Ont	Poland Chinas.
Elliott, A	Pond Mills, Ont	Tamworths.
Elliott, Andrew	Galt, Ont	Tamworths.
Everett, W. W	Chatham, Ont	Berkshires.
Fisher, W. W	Ben Miller, Ont	Poland Chinas.
Fraser, D. & Sons	Emerson, Man	Poland Chinas.
Fletcher, Jos	Oxford Mills, Ont	Yorkshires.
Franklin, D	Bar River, Ont	Tamworths.
Frink, B. H	Napanee, Ont	Berkshires.
Foreman, A. & H	Collingwood, Ont	Yorkshires.
Furness, Robt	Vernon R. Bridge, P. E. I	Chester Whites.
Fahner, Chris	Crediton, Ont	Duroc Jerseys.
Ferguson, Jas	Vesta, Ont	Tamworths.
Featherston, Joseph	Streetsville, Ont	Yorkshires.
Frank, A. & Sons	The Grange, Ont	Southdowns, Durhams, Thoroughbred Horses, Suffolks.
Goodhue & Co	Danville, Que	Chester Whites.
Garbutt, C. T	Claremont, Ont	Berkshires.
Graham, D. A	Parkhill, Ont	Berkshires.
Gibson, R	Delaware, Ont	Yorkshires.
Gummer, Geo. A	Colborne, Ont	Chester Whites.
Germ, Leon	St. Edwards, Que	Berkshires.
Glover, G. W	Nottawa, Ont	Chester Whites.
Graham, Andrew	Pomeroy, Man	Yorkshires.
Greenway, Hon. Thos	Winnipeg, Man	Berkshires and Yorkshires.
Gier, Geo	Grand Valley, Ont	Yorkshires.
Greenshields, J. N	Danville, Que	Yorkshires.
Golding, Henry	Thamesford, Ont	Chester Whites and Tamworths.
George, E. D	Putnam, Ont	Chester Whites.
Gardner, F. A	Britannia, Ont	Berkshires.
Gregg, H. & Sons	Saltford, Ont	Berkshires.

LIST OF MEMBERS OF SWINE BREEDERS' ASSOCIATION.—*Continued.*

Name.	Address.	Class.
George, H. & Sons	Crampton, Ont	Chester Whites.
Green, Geo.	Fairview, Ont	Berkshires.
Gowdy, W. Y	Fairfield Plain, Ont	Berkshires.
Gilroy, C. J. & Son	Glen Buell, Ont	Berkshires.
Goodger, W. & Son	Woodstock, Ont	Berkshires.
Henderson, W. C.	Keady, Ont	Berkshires.
Hunter, A. E	Exeter, Ont	Duroc Jerseys.
Herron & Defoe	Avon, Ont	Tamworths.
Hardy, Jno. A.	Kent Bridge, Ont	Berkshires.
Hord, Jno. & Son	Parkhill, Ont	Yorkshires.
Hoover, Alfred	Green River, Ont	Tamworths.
Hall, Gilbert	Arkona, Ont	Yorkshires.
Honey, R	Brickley, Ont	Yorkshires.
Hume, Alex. & Co	Burnbrae, Ont	Yorkshires.
Haycraft, W. J	Agincourt, Ont	Berkshires.
Hyde, Geo. A	Shakespeare, Ont	Berkshires.
Hawkins, Dennis	Woodville, Ont	Berkshires and Yorkshires.
Hurry, H'y. R	Charlottetown, P. E. I	Yorkshires.
Hartman, J. W.	Elm Hedge, Ont	Berkshires.
Hainsworth, C. E.	Marquette, Man	Berkshires and Yorkshires.
Hauser, Ignatius	Weisenburg, Ont	Berkshires.
Hallman, A. C	New Dundee, Ont	Tamworths.
Hanley, J. C	Read, Ont	Berkshires & Poland Chinas.
Hyslop, Robt.	Brantford, Ont	Berkshires.
Hurley, J. M. & Son	Belleville, Ont	Yorkshires.
Harding, R. H	Thorndale, Ont	Chester Whites.
Hood, G. B	Guelph, Ont	Yorkshires.
Horton, Ed.	New Dundee, Ont	Berkshires.
Ingles, Geo.	Maple Hill, Ont	Yorkshires.
Inman, Fred	Eden, Ont	Berkshires.
Johnston, A.	Greenwood, Ont	Yorkshires.
Jamieson & Argue	Lacombe Alta, Ont	Berkshires.
Jones, E. A	Kertch, Ont	Berkshires.
Jones, W. & H	Mount Elgin, Ont	Yorkshires.
Jarvis, Paul	Florence, Ont	Duroc Jerseys.
Ker, J. G	Fulton, Ont	Berkshires.
Kenney, J. W.	Heathcote, Ont	Yorkshires.
King, J. C	Uxbridge, Ont	Berkshires.
Keough, Jas. E	Rockwood, Ont	Yorkshires.
Kitson, Wm.	Burnside, Sta., Man	Berkshires.
Kipp, Edgar, A	Chilliwack, B. C	Berkshires.
King, Wm	Oakley, Assa	Berkshires.
Kneal, J. A.	Holbrook, Ont	Poland Chinas.
Kitching, John	Corwhin, Ont	Berkshires.
Kipp, Henry	Chilliwack, B. C	Berkshires.
Lloyd, Ed. A	Stouffville, Ont	Berkshires.
Laidlaw, W. G	Wilton Grove, Ont	Berkshires.
Lamarsh, Peter	Wheatley, Ont	Duroc Jerseys.
Lumsden, A. E. F.	St. Francois Xavier, Man	Yorkshires.
Leatherdale, Elias	Morden, Man	Berkshires.
Lang, R. L	Oak Lake, Man	Berkshires.
Mitchell, Jas	Nottawa, Ont	Berkshires.
Mills, Percy G	Rockville, N. B	Poland Chinas.
Martin, J. H	Rapid City, Man	Berkshires.
Mitchell, R. J.	Winnipeg, Man	Berkshires.
Morrison, Alex	Carman, Man	Berkshires.
Mackay, Angus	Indian Head, Assa	Yorkshires.
Martin, R. G.	Marysville, Ont	Berkshires.
Moulton, Thos	Harlem, Ont	Berkshires.
Mullen, Jas. A	Cypress River, Man	Berkshires.
Meyer, John	Kossuth, Ont	Berkshires.
Marter, J. Y	New Dundee, Ont	Yorkshires and Tamworths.

LIST OF MEMBERS OF SWINE BREEDERS' ASSOCIATION.—*Continued.*

Name.	Address.	Class.
Meredith & Dunlop	Thorncliffe, Ont	Poland Chinas.
Master, Levi	Haysville, Ont	Tamworths.
Martin, E. E	Canning, Ont	Berkshires.
Muir, E. H	High Bluff, Man	Berkshires.
McCorkill, J. C	Cowansville, Que	Poland Chinas.
McGill, A. F	Hillsburg, Ont	Yorkshires.
McBlain, Alex	Ladner's Landing, Ont	Berkshires.
McEachern, Bros	Argyle, Ont	Chester Whites.
McLeay, R. J	Castlebar, Ont	Chester Whites.
McEwan, Jas	Kertch, Ont	Berkshires.
McMullen, R. B	Goldsmith, Ont	Poland Chinas.
McFarlane, Archie	Dunmore, Ont	Berkshires.
McDonald, John	Badgerow, Ont	Berkshires.
McAllister, W	Varna, Ont	Berkshires.
McBeth, R. S	Oak Lake, Man	Berkshires.
McLeod, Kenneth	Dugald, Man	Chester Whites.
McKenzie, Rod	High Bluff, Man	Berkshires and Yorkshires.
McCutcheson, H	Glencoe, Ont	Duroc Jerseys.
McGregor, Joseph	Manitou, Man	Berkshires.
McGregor, Jas	Brandon, Man.	Tamworths.
McCowan, Robt	Portage La Prairie, Man	Tamworths.
Noble, Hugh	Kingsey Falls, Que	Chester Whites.
Nicol, J. C	Hubrey, Ont	Tamworths.
North, Geo.	Marden, Ont	Tamworths.
Odell, W. H	Belmont, Ont	Tamworths.
Oughton, J	Crystal City, Man	Yorkshires.
Paul, Jarvis	Florence, Ont	Duroc Jerseys.
Pearce, J. H	Nelson, Ont	Yorkshires.
Parlee, M. H	Sussex, N. B	Berkshires and Yorkshires.
Potter, A. B	Montgomery, Ont	Berkshires.
Pangman, Samuel	Vallentyne, Ont	Berkshires.
Park, J. C	Cunduff, Assa	Berkshires.
Petrit, W. J	Freeman, Ont	Berkshires.
Pearson, S. J. & Son	Meadowvale, Ont	Berkshires.
Pattullo, R. A	Alton, Ont	Yorkshires.
Pike, Jno. & Son	Locust Hill, Ont	Yorkshires.
Purves, Thos	Pilot Mound, Man	Berkshires.
Powers, J. L	Kirby, Ont	Yorkshires.
Runsel, F	Mount Forest, Ont	Yorkshires.
Row, W. & F	Avon, Ont	Poland Chinas.
Richardson, J. W	Essex, Ont	Berkshires.
Robertson, R	Compton, Que.	Yorkshires.
Revell, L. J	Putnam, Ont	Tamworths.
Ramsay & Peacock	Wanstead, Ont	Yorkshires.
Rivers, Wm	Walkerton, Ont	Berkshires.
Rogers, D. A	Geneva, Que	Yorkshires.
Reed, D	Glanford, Ont	Yorkshires.
Rivers, F	Sombra, Ont	Berkshires.
Robinson, Mrs. C. A	Lyn, Ont	Berkshires.
Robertson, D. A	Logoch, Man	Berkshires.
Richardson, J. A	South March, Ont	Tamworths.
Ross, A. W	Douglas, Ont	Berkshires and Yorkshires.
Rogers, G. F	Plumas, Man	Berkshires.
Revell, H	Ingersoll, Ont	Tamworths.
Richardson, H. F	Kerwood, Ont	Tamworths.
Shipley, H. N	Charing Cross, Ont	Berkshires.
Schill, Raymond	Mildmay, Ont	Berkshires.
Sproat, Wm	Virden, Man	Berkshires.
Scott, F. W	Highgate, Ont	Yorkshires.
Simpson, C. M	Almonte, Ont	Yorkshires.
Siprell, E. W.	Carholme, Ont	Berkshires.
Simonton, J. H	Chatham, Ont	Tamworths.

LIST OF MEMBERS OF SWINE BREEDERS' ASSOCIATION.—*Continued.*

Name.	Address.	Class.
Sieffert, J. H	North Bruce, Ont	Berkshi es.
Smith, Jas. S	Maple Lodge, Ont	Berkshires.
Smith, Robt. J	Fargo, Ont	Poland Chinas.
Smith, H. D	Compton, Que	Yorkshires.
Spencer, W. H	Morpeth, Ont	Berkshires.
Sharpe, H. E	Ida, Ont	Yorkshires.
Sparling, Geo	Stafford, Ont	Berkshires.
Speers, W. H	Bronte, Ont	Duroc Jerseys.
Stewart, Wm. & Son	Menie, Ont	Berkshires.
Scott, Jacob	Stonewall, Ont	Yorkshires.
Staples, W. F	Baltimore, Ont	Poland Chinas.
Shanks, Jas. W	Rapid City, Man	Berkshires.
Stirtzinger, Frank H	Fenwick, Ont	Poland Chinas.
Siprell & Carroll	Bornholm, Ont	Berkshires.
Sanderson, Thos	Holland, Man	Berkshires.
Small, J. H	Kelso, Que	Berkshires.
Smith, Jno. & Sons	Duntroon, Ont	Berkshires.
Smith, W. M. & J. C	Fairfield Plain, Ont	Chester Whites.
Sheppardson, W. J	Walter's Falls, Ont	Berkshires & Chester Whites.
Smyth, R. L	Fargo, Ont	Poland Chinas.
Seymour, R. F	Essex, Ont	Berkshires.
Snarey, Bilton & Son	Croton, Ont	Berkshires.
Srigley, John	Allandale, Ont	Berkshires.
Simmons & Quirie	Ivan, Ont	Berkshires.
Shaw, A. J. C	Thamesville, Ont	Berkshires.
Shaw, Jas. H	Simcoe, Ont	Chester Whites.
Snell, J. C	Snelgrove, Ont	Berkshires.
Snell, J. G. & Bro	Snelgrove, Ont	Berkshires.
Shibley, W. J	Harrowsmith, Ont	Berkshires.
Shannon, Thos	Cleverdale, B. C	Berkshires.
Snider, Gideon	Jarvis, Ont	Berkshires & Chester Whites.
Tennent, J. H., V.S	London, Ont	Tamworths.
Turner, David S	Whitevale, Ont	Yorkshires.
Terrill, A	Wooler, Ont	Yorkshires.
Thompson, Geo	Bright, Ont	Berkshires.
Treverton, Chas	Belleville, Ont	Poland Chinas & Tamworths.
Taylor, J. H	Richmond, Que	Yorkshires.
Tape, Bros	Ridgetown, Ont	Duroc Jerseys.
Teasdale, Thos	Concord, Ont	Berkshires.
Thompson, S. J	Carberry, Man	Yorkshires.
Vickerson, Frank	Lacombe, Alta	Yorkshires.
Vance, Ed	Emerson, Man	Yorkshires.
Vance, Robt	Ida, Ont	Berkshires.
Wade, W. W	Ninga, Man	Yorkshires.
Weld, T. Saxon	London, Ont	Berkshires.
Watson, Thos	Springvale, Ont	Yorkshires.
Watson, A. J	Castlederg, Ont	Berkshires.
Warren, A. P	Elizabeth, Pa., U. S. A	Yorkshires.
Wright, B. E	Charlottetown, P. E. I	Yorkshires.
Wilkinson, W. H	Brampton, Ont	Tamworths.
Warrilow, John	Owen Sound, Ont	Chester Whites.
Watt, J. & W. B	Salem, Ont	Berkshires.
Wilson, Wm. C	East Oro, Ont	Yorkshires.
Webster, R. A	Merrickville, Ont	Berkshires.
Wells, Jas	Virden, Man	Berkshires.
Wells, A. C. & Son	Chilliwack, B. C	Berkshires.
Willis, R., jr	Glen Meyer, Ont	Poland Chinas.
Whitesides Bros	Innerkip, Ont	Berkshires.
Wilkinson, Thos	Hamilton, (Insane Asylum)	Berkshires.
Wood, C. E	Freeman, Ont	Poland Chinas.
Walsh, Geo	Onslow Centre, Que	Tamworths.
Ynill & Sons	Carleton Place, Ont	Berkshires.
Young, Capt. A. W	Tupperville, Ont	Poland Chinas.

ANNUAL REPORT

OF THE

DOMINION SWINE BREEDERS' ASSOCIATION

1895.

The seventh annual meeting of the Swine Breeders' Association was held in the City Hall, Guelph, December 11th, 1895, President Daniel DeCoursey, Bornholm, in the chair.

REPORTS OF REPRESENTATIVES TO FAIR BOARDS.

Montreal Exhibition.

In submitting my report as delegate to the Board of Management of Montreal Exhibition Company, I beg to record the result of my mission. I received the notice of my appointment, and was duly notified by the above board of all committee meetings, and was in attendance at same. The Board showed every desire to act on the suggestion of the Association, leaving the naming of judges almost entirely to myself. Seven men were chosen, most of whom were members of the Association, but out of seven only one member was secured, namely, S. Butterfield, of Windsor, Ont., who acted on swine with two legal men. The four men on sheep, two on long wool and two on short wool classes, were also non-members. This state of affairs is due to the fact that the Association has very few members in the Province of Quebec, and most of those who are members were exhibitors. The distance and expense of travelling evidently was the cause of Ontario men refusing to act. So long as the fair boards refuse to give liberal remuneration for good work, and the railways continue to charge high rates, we need not expect to enjoy the services of first-class men from a distance. If it were possible for the Association to secure a reduced rate for members attending the principal fairs during the season, I think it would have a good effect. There was considerable dissatisfaction in the sheep department, especially in the short wool classes; the exhibitors complained of want of experience on the part of the judges. In the swine department most of the exhibitors were fairly well satisfied, but the advisability of employing qualified persons as judges was apparent. There has been a movement on foot for some time to organize a Swine Breeders' Association in Quebec, with head-quarters in Montreal. Our French speaking people find it difficult to register in Ontario, and it has therefore been suggested that the Dominion Association open a branch office in Montreal, and thereby save the expense of a new board which would naturally clash with the other. If the directors of your Association think well to move in this matter they could write S. C. Stevenson, Montreal, who has the matter in hand.

William Tait.

I attended two meetings of the Montreal Fair Board as a delegate from the Dominion Swine Breeders' Association. At my suggestion and according to your wish, Mr. Joseph Featherston was appointed judge. I find that the Board are desirous of making this class as inviting as possible to breeders, either through an increase in the amount of prizes or by other means. Judges gave general satisfaction. The accommodation was not good, there being no convenient place on the grounds for meetings of delegations or committees. I have nothing to charge for my expenses, as I had to visit Montreal on private business.

G. Beaudet.

Peterboro' Exhibition.

I beg to report that I attended the Peterboro' Fair, held on the 23rd, 24th of September, 1895, and also a number of board meetings at previous dates. The swine exhibit this year was not equal to that of last year, owing, no doubt, to the dulness in trade this season. There were, however, some fine specimens of Berkshires, Tamworths and Yorkshires shown. The pens are good and sufficient in number, and all that is necessary to make a first class swine exhibit is a better prize list. If your delegate another year, I hope to be able to report one or two minor, though necessary, changes which I shall not mention now. Two judges officiated this year and gave general satisfaction.

Robert Vance.

Toronto Industrial.

I attended three meetings of the Fair Board of the Toronto Industrial, namely, the annual meeting, a meeting for the revision of the prize list, and one for the appointment of judges. Mr. Brethour and I represented the Swine Breeders, and were very courteously received. Any suggestions we made was respectfully listened to, and we found the management quite willing to select judges from among those named as expert judges by the Swine Breeders' Association. We succeeded in getting $100 added to the prize list for swine, which, although it is not much when divided among so many classes, is, however, a step in the right direction, and if a little is added every year we will in time get the prize list where it should be. I think before another year there will be new pens. These are very much needed.

Thomas Teasdale.

I attended two meetings of the Toronto Industrial Fair Board, one in March for the purpose of revising the prize list, and again in July for the appointment of judges. We were well received by the Board, and it was a great satisfaction to see the influence our Association wielded with the Board of Directors They received and acted upon suggestions from your delegates, and everything was done to further the mutual interests of the exhibitors and the Fair Board. We succeeded in having $100 added to the list of swine exhibits, and we strongly urged the necessity for a larger and more varied prize list. I have already felt that the amount of money appropriated for the swine department by the various fair boards is not sufficient. We were promised new and modern buildings for next year's exhibition, and it is to be hoped that our Association will prepare suitable plans for the construction of the same that we may have pens in which our stock may be seen to the best advantage, and the best possible ventilation secured.

J. E. Brethour.

Guelph Central Exhibition.

As the representative of the Swine Breeders' Association to the Central exhibition, Guelph, I have to report that with Mr. Anderson's assistance we got another class (Chester Whites) added to the prize list. We again succeeded in getting an expert judge appointed from the list furnished by the Association, but I am sorry to have to say that he disappointed us at the last moment and a local man had to be taken in his place. I

would respectfully call the attention of the Association to this matter, and would suggest that they make it a rule that whenever a judge disappoints a fair board for some trivial cause his name should in future be left off the list of expert judges. If this Association expects fair boards to adopt their views and carry out their suggestions they must do their part faithfully and well.

G. B. Hood.

Major Hood and I got the directors to arrange the prize list as suggested to us by the Swine Breeders' Association, viz, "Boar and four of his produce," and "Sow and four of her produce." We got two pure breeds added to the prize list and several other improvements which were suggested to us.

James Anderson.

London Western Fair.

As delegates from the Swine Breeders' Association to the Western Fair Board we were kindly received, but we did not accomplish anything except the appointment of expert judges. We tried to obtain an increase in the prize list for swine but did not accomplish much. Notwithstanding the fact that the Board have promised to floor the pens for the last three or four years, fully one-half of the exhibit had a floor of red sand, but we hope for the best as they have promised new pens for another year.

R. H. Harding.

Kingston Fair.

Having been appointed a delegate to the Kingston Fair Board, I beg to report as follows: I received notice from the secretary of my appointment, also that I would be notified when the Board met, but I did not receive a notice and consequently did not attend. Being connected with the Belleville Fair Board I succeeded in increasing the prizes for sheep, and had classes added for Oxfords and Dorset Horned sheep, making classes now for all the leading breeds, and a cash prize list of $250. I also succeeded in having all diplomas struck out, and as nearly as possible followed the recommendations of the Association in each section of the classes. We also increased the prizes for swine, giving classes for Yorkshires, Berkshires, Chester Whites, Poland Chinas, Tamworths, Jersey Reds and Victorias, putting ten sections in the classes of the leading breeds. All diplomas are struck out, and we have a cash prize list of $275. All the recommendations of the Association were, as far as possible, carried out. We also appointed an expert judge for swine, who gave general satisfaction, and we have been requested by the sheep breeders to appoint an expert judge next year for the different classes of sheep. We secured better accommodation for the swine, good roomy pens, with an aisle in the centre between each row, which is about the only thing in which we beat Toronto. We also had some very fine sheep pens built, thirteen feet square, with open fronts and doors on hinges, also some half pens for smaller flocks, which were pronounced the best sheep pens in the district.

J. M. Hurley.

ELECTION OF OFFICERS.

The officers, delegates to fair boards, etc., were then elected. See page 44.

It was moved and seconded that a section be added for Duroc Jerseys, and that a director be appointed. Carried.

Moved by R. H. Harding, seconded by Joseph Featherston, that in order to enable the Western Fair Board to hold a satisfactory exhibition for a city like London, we heartily commend the action of the Western Fair Board in asking for a bonus to enable them to carry out this work, and we recommend that an increase in the prize list be granted in the swine department. Carried unanimously.

On motion, Mr. Frank was allowed to speak with reference to a special breed of hogs he claims to have originated. His remarks were as follows: I have had considerable experience in raising hogs; my efforts date back to 1848. I had then the common hog of Canada, but I considered it was not suitable and so introduced the Yorkshire. These I found difficult to get along with as they took some time to mature, and I gave them up. I then took up the Berkshire, and also the Suffolk, I tested the two classes together and got along best with the latter. I have nothing to say against other breeds. I bred the Suffolk for over thirty years without finding a more suitable breed, until the pork packers spoke against the Suffolk as being too small and too fat, and I then set to work to select the largest and most lengthy hogs in the litters. Since then I have got them so large that, as a general rule at our exhibitions, the judges say they are too large a hog and that they do not represent the Suffolk. I am satisfied that they are a better hog for packers and for the farmers than the small Suffolk, and I would ask this Association to give me the privilege of using a different name, and another class, say the "Improved Suffolk" pig. I consider they are an improvement for the market at the present time. They grow much larger and they suit the market. I think I should be entitled, under these circumstances, to have a fair show at the fairs. They are as purely-bred as any Suffolk pig reared in this Province. No other blood has been mixed in with them for the last thirty-five years.

Mr. Ormsby: I think before this meeting decides to give a class for any pigs, we should examine the pigs and know something about them. I think, certainly, before anything is done a committee should be appointed to examine these pigs and see whether they are worthy of being classed as a new pig. It may be possible that he has bred these Suffolks more like a class of Yorkshires in the United States. I do not think that the Dominion Swine Breeders' Association should introduce a breed of hogs before first examining them. I move, therefore, that a committee be appointed to examine his pigs and report.

A FEW COMMENTS ON THE SWINE BREEDERS' REPORT OF 1894.

By Capt. A. W. Young, Tupperville, Ont.

In presuming to write on some of the questions involved or touched on in the report of 1894, I do so, not to arouse antagonism but for the purpose of bringing out ideas. Only by open discussion can disinterested parties and those wishing to learn the opinions of experts be satisfied.

The review by Mr. Gibson is characteristic of the man, and is to the point; by my measurement it is all wool and a yard wide.

I am interested in sheep, and Mr. Dickin's paper strikes a red-hot question. Mr. Dickin's suggestion to put a high tax on dogs, the tax to be under municipal control, will not, in my opinion, be satisfactory. I think there should be a provincial tax on all dogs, say a dollar or two, and enforced by the municipality; an excessive tax, such as proposed by Mr. Dickin, will exterminate the only kind of dogs of any use; I refer to the farm watch-dog. Sportsmen who own the dogs referred to as being the guilty ones, would, in many cases, pay five times as much as Mr. Dickin proposes rather than have their dogs destroyed. I like that part of his suggestion where he proposes to make it a misdemeanor for anyone owning a dog to allow it to run at large, unmuzzled, from sunset until sunrise. I think if he had said from sunset until sunset it would have been better. Just allow friend dog liberty enough to air his bark, keep him under control, while, as Mr. Elliot says, "he is converting good food into waste matter."

In Prof. Saunders' paper he presents the results of a number of valuable experiments, a summary of which shows, that a pig weighing more than 200 pounds requires 5.94 pounds of food per pound increase, while a pig under 200 pounds requires only 4.26 pounds of food per pound increase. A fair quality of ground feed can be obtained for 60

cents per hundred, which makes the cost of one pound increase, in pigs weighing over 200 pounds, 3 56 cents, and in pigs weighing under 200 pounds 2.55 cents. With the price per live weight at $3 00, about half a cent per pound is gained on each pound of increase when a pig is under 200 pounds, and about half a cent lost on each pound of increase when a pig is over 200 pounds.

I was very much pleased with the paper by the Hon. John Dryden. A high ideal must be formed before success can be achieved, and we must be satisfied with nothing less than that ideal; but while striving to attain it the material within reach must not be neglected.

I must compliment my friend Mr. Snell on his able criticism of the 1893 report. If there were no diversity of opinion on such matters, there would be no necessity for discussion. There seems to be little choice as to breeds with respect to the feeding qualities, but some men prefer one kind and some another. Mr. Snell, in his criticism of my paper, favored the Berkshire; this was quite right. A man who will not stand up for his favorite breed and give his reasons for doing so is not worthy of the name of breeder. This is what Mr. Brethour did some time ago in the "Farmer's Advocate," advocating the merits of the Yorkshire, and giving reasons why he considered it should have prominence among other breeds. With all his remarks I do not agree, but Canada with its adjoining commons, the United States, the Indies and Europe is quite large enough for me without being forced to elbow Mr. Brethour or Mr. Snell. Mr. Snell says, "the Berkshire with characteristic quietness, dignity and conscious superiority is steadily gaining ground." Mr. Chairman, no two of us are constituted exactly alike. I, for one, have the not uncommon faculty of wishing to learn something of advantage to my business; sometimes when listening to others and sometimes when reading I learn startling truths. I wish to state that, in my opinion, breed does not make as much difference as type. I have been occasionally asked what I meant by the proper type, or rather what type should be used to develop the hog that will respond most quickly to the food consumed. I favor the following: A male, medium length, weighing about 600 or 700 pounds when in full flesh at maturity; this is what we call in the Poland Chinas, the medium type. The dam should be lengthy, low and as large as possible, the maternal qualities being present in a marked degree. A cross between such types is what I would recommend to the man who wants pork only. I would be pleased to hear from Mr. Snell, Mr. Featherston, Mr. Brethour, Mr. Harding and others, why their respective breeds are to be preferred to all others, and let the rest use the cudgels. I wish the Associatio the success it so well deserves under the direction of its live and energetic Secretary.

Mr. Jos. Featherston, M.P., moved, and R. H. Harding seconded a vote of thanks to D. DeCoursey, the retiring president. Carried amid applause.

MEETING OF THE DIRECTORS OF THE DOMINION SWINE BREEDERS' ASSOCIATION.

A meeting of the directors of the Dominion Swine Breeders' Association was held in the Hotel Oxford, Woodstock, Ont., on the 7th day of January, 1896, Joseph Brethour, President, in the chair. The minutes of the last meeting were read and confirmed.

TREASURER'S REPORT.

The treasurer's report was read and adopted:

Receipts.

Cash on hand, as per last report	$301 41
Members' fees	488 00
Legislative grant	700 00
Entry fees, Fat Stock Show	95 00
Proportion of prizes not paid at the Fat Stock Show	72 89
Total	$1,057 30

Expenditure.

Expenses for meetings	$105 43	
Officers' salaries	100 00	
Postage and stationery	75 54	
Printing	106 26	
Cash paid for prizes	453 09	
Vols. of Swine Record	391 05	
Cost of reporting meetings	41 00	
Auditors' expenses	5 00	
Telegraph	1 21	
Express	2 03	
Duty	90	
Total		1,281 50
Balance on hand December 31st, 1895		$375 80

ANNUAL REPORT OF THE SECRETARY.

The secretary's annual report for 1895 was read as follows:

The year 1895 has been the most successful in the history of our Associations. On May 23rd, 1895, a very important and largely attended meeting was held in London, at which a large amount of important business was transacted.

The experimental work suggested in my report of last year was debated at length; the breeders were not a unit on the question and it was finally left over for future consideration.

The reports of the committees appointed to draft model sets of rules and prize lists for the sheep and swine departments at the provincial, county and township shows, were received, amended, passed and ordered to be published in the annual report, which was done. The following committees were appointed:

The executive officers to consolidate and re-arrange the constitution and by-laws.

John Jackson, Abingdon and James Tolton, Walkerton, the winter show committee for the Sheep Breeders' Association. Major G. B. Hood, Guelph and R. H. Harding, Thorndale, the winter show committee for the Swine Breeders' Association.

The programme committee for the Swine Breeders' Association, Joseph Brethour, Burford and R. Gibson, Delaware; for the Sheep Breeders' Association, John Jackson, Abingdon and J. C. Snell, Snelgrove.

Railroad and Transportation committee, John I. Hobson, Mosboro' and R. Gibson, Delaware.

A meeting of each association was called at Toronto during the week of the Industrial Exhibition, of which due notice was given to each member; these meetings were also widely advertised. At the time and place announced the report of the committee appointed to consolidate the constitution and by-laws was presented to the members and by them discussed at length, amended, and adopted as amended. The executive instructed the secretary to have said constitution, by-laws, etc., published in pamphlet form, and distributed among members, which has also been done in part.

The fat stock committees co-operated with similar committees appointed by sister associations, and with them conducted in Guelph the most successful winter show ever held in Canada, a full report of which has been carefully prepared and will be published in our annual report for 1895. The program committee prepared the following program for the winter meeting:

The annual meeting of the Dominion Sheep Breeders' Association will convene in the City Hall, Guelph, at 2 p.m., December 10th.

From 2 p.m. to 6 p.m. will be spent in carrying out the following program:

1. Addresses and reports of officers.
2. Reports of committees.
3. Nomination of expert judges.
4. Election of delegates to fair boards.
5. Election of auditors and officers.
6. Adjournment.

The annual meeting of the Dominion Swine Breeders' Association will convene in the City Hall, Guelph, December 11th, at 9 a.m.

From 9 a.m. to 12 30 a.m. will be spent in carrying out a program similar to the above.

The judging of swine will not commence until 2 p.m. on the 11th.

At 7.30 p.m., December 10th, an open meeting will be held under the auspices of the Sheep and Swine Breeders' Associations, the Guelph Fat Stock Club, and the Dairymen's Association of Western Ontario.

PROGRAMME.

7.30. Chair taken by Hon. John Dryden.

7.40. Address of welcome by Mr. James Innes, M.P., Guelph.

8.00. Response by Mr. Andrew Pattullo, Woodstock, President of the Dairymen's Association of Western Ontario.

8.20 The requirements of the British market, with special reference to our exports of cattle, sheep, and swine, and products therefrom, Prof. James W. Robertson, Dominion Agriculturalist and Dominion Dairy Commissioner, Ottawa, Ont.

9.00. Economical cooking of meats (demonstrated), Miss B. Livingston, Superintendent Ottawa School of Cookery.

The program will be interspersed with music and songs, by the Glee Club and city talent, the evening to be closed by the singing of the National Anthem.

The above was most successfully carried out, all the meetings being largely attended; in the evening over 600 persons, of which fully 300 were ladies, assembled in the City Hall; quite 200 others sought admittance but found no room. In point of attendance this was the most successful gathering ever held by the Associations. The speeches delivered were instructive and valuable; a synopsis of each will also be found in our forthcoming report.

The winter show committee were highly gratified with the result of their efforts, which, as before stated, were highly successful.

The railroad and transportation committee have not yet reported, but at the meeting held in Guelph this committee was re-appointed, and two other gentlemen whose names will be found in the minutes of the last meeting were added.

REGISTRATION OF LIVE STOCK.

The Hon. John Dryden, Minister of Agriculture, met the representatives of the different Live Stock Associations in my tent on the exhibitions grounds, Toronto, at 8 o'clock on the evening of the 12th of September. The Minister explained the new order of things. His explanation in substance were as follows: The Government may appoint a superintendent of registration, who will receive from the Government, independent of the fees received from the associations, a yearly salary of $1,500 and a free office heated and lighted. Each association will be left free to conduct its own records or to allow the superintendent to edit them at a price per pedigree, to be jointly agreed upon by the Minister and the officers of the associations. If any association makes an agreement

with the Minister, and afterwards finds the arrangement unsatisfactory to a majority of the officers or members, said association shall be at liberty to withdraw from the agreement and remove to any other office, all the books, volumes of the records, no matter when or where edited, blanks, etc., that pertains to said association. It shall be left to each association to finally decide on terms; if these are acceptable to the Minister, the work will be gone on with as proposed.

Two representatives were present from each of the following associations: The Clydesdale Horse Breeders' Association, the Hackney Horse Breeders, the Shire Horse Breeders, the Shorthorn Breeders, the Hereford Breeders, the Ayrshire Breeders, Holstein-Friesian Breeders, the Dominion Draft Horse Society, Messrs. Snell and Hobson representing the Sheep Breeders' Association, Jackson and Hodson representing the Sheep Record Association, and Brethour and Featherston representing the Swine Breeders' Association. The representatives of each Association on being called on (with the exception of the Holstein-Friesian Association), expressed themselves as willing to co-operate with the Minister in the scheme proposed by him for the registration of live stock. The Holstein-Friesian Association wish to maintain the handling of their own records as heretofore.

It was moved by Mr. David McCrae, seconded by James Russell, and carried unanimously, "That a fee be paid to the superintendent of registration, and that a sum be agreed upon between the parties concerned, with the approval of the Honorable Minister of Agriculture, to be retained as pay for clerical work."

It was also moved by Mr. Arthur Johnston, and seconded by Jos. Brethour, "That each Association shall, by the present representatives, meet the Minister of Agriculture, and together with him arrange terms upon which they will employ the services of the superintendent of registration." Carried unanimously.

Your committee appointed at the September meeting has had a meeting with the Minister and is prepared to report to you to-day. If, after you hear the report, you decide to accept the Minister's proposition, I respectfully call your attention to the following:

1. A committee should be appointed to carefully revise the rules governing entry in the various sections of the Dominion Swine Record.

2. New divisions shall not be opened without the authority of this Association.

3. An editing committee should be appointed for each division.

4. The clerical work only should be done by the recording secretary; that is, he should be required to prepare all volumes, including index, transfers, etc., as required by the executive, and to do all proof-reading as it is forwarded to him by the printers. The executive of the Association should let all printing, binding, etc., and distribute all volumes among their members according to their rules. A bad distribution of the volumes has caused much trouble and serious complaint in the past.

What shall we do with our sheep record is a question to be settled to-day. For a year or two after they were first opened they were well patronized, but during the last year very few sheep have been registered. Messrs Geary, Gibson, Walker, Oliver and Jackson were among the early patrons but have withdrawn and are now registered in the American records. The reason assigned even by friends of the Canadian sheep record is, that to sell to Americans, Canadian breeders must record in the United States. Two plans are open to us: 1. To loyally support Canadian records by recording in them. 2. To discontinue the Canadian records and record only in the United States. If we follow the first plan we are compelled to record in Canada and in the United States. If the second plan is adopted, I think this Association should be represented on the board of each American record association in which we are interested. Experience and correspondence has taught us that the American associations are inclined to make their records international and to use Canadian patrons justly. Where the American associations will not pay the expenses of Canadian representatives who attend annual and board meetings, the Dominion Sheep Breeders' Association should do so. To ask a Canadian breeder to attend the meetings of international record associations in the

interest of Canadian sheep breeders, and allow him to give his time and pay his expenses, is not just, nor is it in the interest of this Association or the class we represent. An official sent from this Association to each of the American associations in which we are interested will bring us into closer touch with our American customers, and perhaps we may in time induce Americans to hold some of their association meetings on this side of the line. If this plan is adopted the representative of this Association should be given a power of attorney by each Canadian member of the respective American association, who cannot attend the meeting in question. If Canadian sheep records are discontinued, shall we not return to each party who has registered with us the amount he has paid for such service.

For several years past the Dominion Swine Breeders' Association has made an annual grant of $500 towards the prize list of the winter show. To this the Agriculture and Arts Association has added $425 each year, $830 being offered in the pure-bred classes and $96 to grades, making a total of $926. The other expenses of this Association, including postage, stationery, directors' expenses, expenses incurred in connection with the annual meeting, preparing the report for publication, etc., $400. Total yearly outlay, $1,326. Our yearly receipts, basing our calculations on last year are :

Government grant	$700 00
Entry fees at winter show	96 00
Balance of members fees after distributing volumes of record among members	100 00
Prizes not paid at the winter show	75 00
Total receipts	$971 00

The Dominion Sheep Breeders' Association for a like period made an annual grant of $500 to the Provincial Show. To this the Agriculture and Arts Association has added $401 ; $685 being offered in the pure-bred classes an $216 given to grades. The other expenses incurred by this Association each year, including directors' expenses, expenses of annual meeting, the preparation of the annual report, postage, stationery, etc., $400. Total expenses, $1,301. The receipts are as follows :

Government grant	$850 00
Members' fees	96 00
Entry fees, winter show	114 00
Total receipts	$1,060 00

It is therefore evident, that if we are to continue the Provincial Winter Show and successfully conduct the business undertaken by these associations without further aid from the Agriculture and Arts Association, the annual grant to each association must be increased. The rules, regulations, and prize lists of the Fat Stock Show should be carefully revised. For some time it has been felt that a separate class should be made for each breed of sheep. This can only be done by dividing the money now offered, and readjusting the classes. What effect this will have on the show is hard to say, but it is a question that should be carefully considered to-day, and if thought necessary a committee appointed to make a revision as directed by this meeting. This rearrangement cannot be completed until we have waited on the Minister of Agriculture, and learned from him whether or not our annual grants can be increased.

Heretofore it has been our custom to hold our annual meeting and the meeting on which our report was based at the time of the winter show, but as the work in connection with the show increased, your directors have found it more and more difficult each year to attend these meetings and devote to them the time and attention they deserve. The election of officers and representatives from these associations to the various fair boards, the selection of expert judges for each breed and other routine business requiring the utmost care and attention, consume all the time that can be devoted to work of this sort at the time of holding the show. Yet the fact remains that each of our associations must hold a meeting entirely or largely devoted to the discussion of practical themes in

connection with the sheep or swine industry as the case may be. This is necessary in order to procure a suitable report such as is required of us by the Department of Agriculture. I have devoted a good deal of thought to this subject, and I beg to make the following suggestions as most likely to meet the requirements at the least possible cost: 1. That at the annual meeting each year the president, vice-president and directors shall be elected; also two auditors, and delegates to represent this Association at such fair boards as the meeting by vote decides; expert judges shall be nominated. The reports of the executive officers shall be received as required in clause 18 of the by-laws. 2. That at some other date each year the Association be convened to carry out a program similar to that provided in 1893 and 1894. This meeting should be held at a point to be hereafter chosen. It has been decided by the Minister that there shall be held each year two meetings of institute workers, one in the eastern and one in the western part of the Province. I suggest that we yearly hold a meeting (the report of which shall form the body of our annual report), in conjunction with the Associations which meet at this time. If this plan is carried out, we could meet one year in the eastern part of the Province, and the next year in the western part of the Province. From 9 a.m. to 3 p.m. could be devoted to the discussion of a program prepared by the Sheep Breeders' Association. From 3 p.m. to 10 p.m. could be devoted to a program prepared by the Swine Breeders Association. The next day could be devoted to cattle and horses in like manner. The expenses of such an arrangement should be fairly divided between the Institute system and the Cattle, Sheep and Swine Breeders' Associations. This plan would not only reduce our annual expenses, but would insure a good audience at our gatherings, and by holding our meeting in different places we will extend the usefulness of our Association. If we continually hold our show in one place, we will certainly be required to hold other meetings in different portions of the Province. This is the practice followed by other associations which are chartered under the Agriculture and Arts Act.

Two years ago it was decided to prepare and publish a standard of excellence, etc., for each breed. Should this not be completed during 1896? The probable cost of this work will not exceed that incurred in preparing other matter for publication in our annual report. If you decide that this shall be done, the secretary should be instructed to proceed with the work, and be authorized to obtain the services of English, American and Canadian experts, and procure and consult the latest and best books dealing with this subject, and that each director be requested to render him all the assistance in his power, and that the various standards, histories, etc., when completed by these gentlemen, be submitted for ratification to the members of this Association at a meeting called for the purpose, and that suitable illustrations be procured to illustrate the work.

Last year, as before stated, we held meetings on the grounds of the Toronto Exhibition Association. In order to secure a meeting place I obtained the use of a large tent. This added considerably to my work, but the venture was in many respects very successful. It proved a convenient meeting place for live stock associations and live stock men. It was, in a word, headquarters for those interested in agriculture, live stock and dairying. This venture has been so well received that I have been urged to attend London and Toronto exhibitions in 1896, in like manner Do you consider this undertaking worth the trouble and expense? At Toronto, Mr. Hill supplied the tent with chairs and other requisites. The following Associations held meetings in the tent during the exhibition:

Dominion Sheep Breeders' Association.

Dominion Swine Breeders' Association.

Dominion Cattle Breeders' Association.

Canadian Jersey Breeders' Association.

The Dairymen's Association of Western Ontario.

And two or three other kindred associations.

F. W. Hodson,

Secretary.

Moved by Mr. TEASDALE, seconded by Mr. HARDING, that the Secretary's report be accepted and taken up clause by clause. Carried.

Tent.

Moved by Mr. HOOD, seconded by Mr. ELLIOT, that in the opinion of this meeting it is desirable that a tent be provided at Toronto, Ottawa and London fairs for the holding of meetings of the several live stock associations, provided the different fair boards pay the expense of seating and lighting, and provide passes for the secretary and attendants. Carried.

Standard of Excellence.

Moved by Mr. HARDING, seconded by Mr. SNELL, and carried, that the standard of excellence for each breed recognized by this Association be completed for the report of 1896, in accordance with the Secretary's report. Carried.

Winter Show.

Moved by Mr. HOOD, seconded by Mr. ELLIOT, that on some date other than that of holding the winter show, each year this Association be convened to carry out a programme similar to that of 1893 and 1894, and that said meeting be held at a point hereafter to be chosen by the executive. Carried.

Additional Grant.

Moved by Mr. GREEN, seconded by Mr. HOOD, that this Association respectfully requests the Government to increase the annual grant given to this Associatian. Carried.

The following were appointed a committee to interview the Government regarding an additional grant: the President, Mr. Hood, Robert Dorsey, Thomas Teasdale and Joseph Featherston, M.P., Streetsville.

Rules and Regulations Governing Winter Show.

Moved by Mr. SNELL, seconded by Mr. HOOD, that $1 be charged for each entry, and that the show close at three o'clock on the the last day instead of four as heretofore, and that the Referee be changed to Reserve Judge. Carried.

Prize List.

Moved by Mr TEASDALE, seconded by Mr. HARDING, that our Secretary be requested to communicate with the Secretary of the English Berkshire Association, asking him that if said Association give a special prize at our winter show it be given for the best Berkshire sow of any age, whether imported or Canadian bred. Carried.

Moved by Mr. HARDING, seconded by Mr. SNELL, that our Secretary be authorized to write the different foreign Associations asking them for special prizes for our winter show Carried.

Moved by Mr. TEASDALE, seconded by Mr. HARDING, that the prize list be changed so as to read for "pigs over nine months and under fifteen months." Carried.

Moved by Mr. SNELL, seconded by Mr. GREEN, that Tamworths and Duroc Jerseys be allowed $90 in each class. Carried.

Moved by Mr. HARDING, seconded by Mr. TEASDALE, that class known last year as 18 include hereafter only Suffolks and Essex, instead of Victorias, Suffolks, Essex and other breeds, and that all pigs shown in this class be required to register in Ontario. Carried.

Moved by Mr. HARDING, seconded by Mr. J. C. SNELL, that in the pure-bred classes the pen prize be reduced to two prizes of $15 and $10. and that a class of "under six months" be added in all classes, the prizes to be $8, $6 and $4. Tamworths and Duroc Jerseys to be deducted from and added to *pro rata*. Carried.

Judges at Fat Stock Show.

Joseph Featherston, M.P., Joseph Brethour, J. G. Snell, reserve, for Chester Whites, Poland Chinas, Jersey Reds and Grades.

Thomas Teasdale and James Main, Andrew Elliott, reserve, for Berkshires, Yorkshires, Tamworths and Suffolks and Essex.

All the sweepstake prizes to be judged by the acting judges in both classes.

Provincial Show Committee.

G. B. Hood, J. C. Snell and Joseph Brethour.

Programme and Executive Committee.

The President, Vice-President, Secretary, G. B. Hood and J. C. Snell.

Registration.

The President, Mr. JOSEPH BRETHOUR, reported for the Record Committee appointed to meet Mr. Wade. The following proposals were then discussed.

To the President of the Swine Breeders' Association:

DEAR SIR,—In reference to the letter of your secretary, dated January 1st, asking for a statement of prices for recording swine, I am prepared to do all the work asked for in that letter on the basis of the 4th volume for the rate of 25 cents per pedigree and 10 cents per transfer; also will furnish postage and stationery for the first year for the sum of 7 cents per pedigree.

If your committee should adopt the abbreviated form, as per Shropshire book, I will do the work for 20 cents per pedigree, 10 cents per transfer, postage and stationery at the same rate as in former offer, and will in addition in both cases, give the name of breeder of sire and dam if required without additional charge.

(Signed) HENRY WADE.

Toronto, January 3rd, 1896.

ST. GEORGE, December 30th, 1895.

F. W. Hodson, Esq.,
Secretary Swine Breeders' Association, Guelph, Ont.:

DEAR SIR,—I understand that the Swine Breeders' Association, of which you are secretary, will receive tenders for the work of issuing the records of the said Association, and I beg to submit the following rates at which I would be willing to undertake the work. Calculating on the basis of say 3,000, I would engage to perform this work for the sum of $600 per annum, or at the rate of 20 cents per pedigree. At this rate I would be prepared to find my own office, provide the necessary stationery and pay postage, or if the Association is willing to provide an office with light and heat I could then tender for the work at $450 per annum, provided, that the cost of postage and stationary be met by the Association.

(Signed) W. A. CLEMONS.

GUELPH, Ont., December 16th, 1895.

DEAR SIR,—I hereby tender the following rates at which I am willing to accept the issuing of the records for the Dominion Swine Breeders' Association.

To find my own office, light and heat, pay postage and provide necessary stationery, 20 cents per pedigree (approximating number of pedigrees at 3,000), or $600 per year.

If an office, lighted and heated, be found by the Association and the postage and stationery provided by them, I would be willing to accept the work at 15 cents per pedigree or $450 per year.

Transfers 10 cents.

(Signed) A. P. WESTERVELT.

F. W. Hodson, Esq ,
Secretary Dominion Swine Breeders' Association, O.A.C., Guelph, Ont.

After discussion it was moved by Mr. HARDING, seconded by Mr ELLIOT, that an offer of 20 cents a pedigree and 10 cents per transfer be made Mr. Wade for doing the clerical work and supplying the postage and stationery.

Moved in amendment by Mr. SNELL, seconded by Mr. Hood, that he be offered 25 cents a pedigree. Amendment lost and motion carried.

Moved by Mr. JONES, seconded by Mr. HARDING, that if Mr. Wade does not accept the offer of 20 cents per pedigree and 10 cents a transfer the Executive employ a clerk and conduct the work. Carried unanimously.

Moved by Mr. SNELL, seconded by Mr. GREEN, and carried unanimously, that clauses 1, 2, 3 and 4 of the Secretary's report be adopted and be made the basis of the agreement with the Recording Secretary if one is chosen.

These sections read as follows :

1. A committee should be appointed to carefully revise the rules governing entry in the various sections of the Dominion Swine Record.

2. New divisions shall not be opened without the authority of this Association.

3. An editing committee should be appointed for each division.

4. The clerical work only should be done by the Recording Secretary, that is, he should be required to prepare all volumes, including index, transfers, etc., as required by the Executive, and to do all proof-reading as it is forwarded to him by the printers. The Executive of the Association should let all printing, binding, etc., and distribute all volumes among their members according to their rules. A bad distribution of the volumes has caused much trouble and serious complaint in the past.

Moved by Mr. SNELL, seconded by Mr. JONES, that the plan adopted by the American Shropshire Association for registering transfers be adopted by this Association. Carried.

Moved by Mr. SNELL, seconded by Mr. JONES, that in publishing the volumes of the record the name and number of the animal be given, the date of birth, the breeder's name, the owner's name, the name, number and breeder of the sire, the first dam's name, number and breeder, her sire's name, number and breeder, and that the pedigree end there, and that the certificate be extended in full. Carried.

Moved by Mr. GREEN, seconded by Mr. JONES, that the membership fee be $2, and that each member be furnished free the volume of the Record issued in the year in which he is a member.

Mr. G. B. HOOD gave notice that at the next annual meeting he would move that the rules be amended so that the members of the Provincial Show Committee may be appointed for a term of years, the same as school trustees, etc.

INTERVIEW WITH THE MINISTER OF AGRICULTURE.

The following gentleman representing the Dominion Sheep and Swine Breeders' Associations had an interview with the Hon John Dryden on the afternoon of February thirteenth : J. C. Snell, Snelgrove ; Capt. Wm. Rolph, Markham ; Jas, Tolton, Walkerton ; G. E. Day, O. A. C., Guelph ; F. W. Hodson, Superintendent of Farmers' Institutes, Guelph ; John I. Hobson, Mosboro' ; Jos. Brethour, Burford ; D. G. Hanmer, Burford ; A. Johnston, Greenwood ; J. B. Spencer, London ; Geo. Green, Fairview ; C. A. Zavitz, O. A. C , Guelph.

Jos Brethour, President of the Dominion Swine Breeder's Association, introduced the deputation. Mr. W. F. Hodson then addressed the Minister as follows : We, the committee, elected at the last meeting of the Dominion Sheep Breeders' Association, beg leave to draw your attention to the following facts : This Association was founded in 1888, with a membership fee of $1 per year. The expenses of the first year were paid by one of our officers. In 1889, a grant of $250 was given us. In 1891 this was increased to $300, in 1893 to $700, and in in 1894 to $850. Our first annual report was issued in 1889, and included 32 pages ; each year the report has grown in size and usefulness, until in 1894, the reports of the Sheep and Swine Breeders' Associations, which were bound in one volume, was the largest, most practical, and most helpful report prepared by any live stock association in America. These reports have been appreciated and sought after not only by Canadians but also by Americans.

In 1893 we appointed delegates to meet others appointed by the Swine Breeders' Association, the Guelph Fat Stock Club, and the Agriculture and Arts Association. The result was a Provincial Fat Stock Club was formed. This joint Society has since held an annual show which has steadily grown in interest, and is now the best exhibition of the kind held in America. Toward the prize list of this show, the Sheep Breeders' have annually given $500 in cash and have paid the expenses of their delegates. Now that the Agriculture and Arts Association has ceased to exist, we must either discontinue the Provincial show or lesson our efforts in other directions, neither of which we consider advisible. The following is an abridged financial statement for 1895, which will make plain our contention :

FINANCIAL STATEMENT.

Receipts.

Government Grant	$850 00
Members' Fees	96 00
Entry Fees to Winter Show, Sheep Department	114 00
Total	$1,060 00

Expenditures.

Secretary-Treasurer's salary	$100 00
Directors' expenses, expenditure in connection with annual meeting and annual report, postage and stationery, printing, etc.	300 00
Prize List Winter Show,	500 00
Prize List Winter Show, heretofore given by Agriculture and Arts Association	401 00
Total	$1,301 00

Heretofore we have had but four classes for sheep, $210 being given in prizes to each class. By this arrangement Cotswolds, Leicesters, and Lincolns met in one class. Oxfords and Hampshires in another, and Southdowns, Horned Dorsets, and Merinos in the third. This is an undesirable classification, but our means would not admit of a better arrangement. At the last meeting of the Directors, the following re-adjustments was decided upon provided sufficient funds could be provided to carry it out. Eight seperate classes were made for pure-breds, viz , Cotswolds, Lincolns, Leicesters, Shropshires, Oxfords,

Southdowns, and a half class each for Dorset Horns and Hampshires and Suffolks, the last two showing in one class. The Grade class stands as heretofore. This arrangement will increase the amount annually given in prizes from $901 to $1,138. An increase of $237 per year, not a large sum, but it will be the means of greatly increasing our show.

If our present arrangements are carried out, our finances on December 31st, 1896, will stand as follows: Receipts $1,060, expenditure $1,538; deficit $478. In order to conduct the work of our Association with vigor and enterprize, as heretofore, we respectfully request that our annual grant be increased to $1,500.

The Dominion Swine Breeders' Association has done a similar work to that carried on by the Dominion Sheep Breeders' Association, and in addition has established a well conducted Record for each breed of swine bred in the province. The last financial statement of this Association is as follows:

FINANCIAL STATEMENT.

Receipts.

Government Grant	$700 00
Entry Fees Winter Show	96 00
Balance Membership Fees, after Printing Record	100 00
Unpaid Prizes	75 00
Total	$971 00

Expenditures.

Secretary-Treasurer's salary	$100 00
Directors' epenses, including expenditure of annual meeting, preparing annual report, postage, stationery, printing, etc.	300 00
Cash Prizes to Winter Show	500 00
Cash Prizes, heretofore given by the Agriculture and Arts Association	25 00
Total	$1,325 00
Deficit	$354 00

We, therefore, respectfully request that our annual grant be increased to $1,200.

Mr. SNELL, Mr. TOLTON and others also spoke, emphasizing the remarks made by Mr. Hodson, Secretary of the Associations. Their remarks elicited the fact that the Swine Breeders' Association have largely increased their work and request an additional grant of $75 per annum. The Sheep Breeders' Association request that their grant be augmented $249 per annum.

EXECUTIVE MEETING OF THE DOMINION SHEEP AND SWINE BREEDERS' ASSOCIATIONS.

The executive officers of the Dominion Sheep and Swine Breeders' Associations, met in joint committee in the parlors of the Palmer House, Toronto, at 4.30 p.m., February 13th, 1896.

The following gentlemen, including the executive officers, were present: J. C. Snell, Snelgrove; Capt. Wm. Rolph, Markham; Jas. Tolton, Walkerton; Geo. E. Day, O. A. C., Guelph; John I. Hobson, Mosboro; Jos. Brethour, Burford; D. G. Hanmer, Burford; A. Johnston, Greenwood, President; J. B Spencer, London; Mr. Warren Green, Toronto; Geo. Green, Fairview; O. A. Zavitz, B.S.A., Agricultural College, Guelph; F. W. Hodson, Guelph. It was announced that the Minister of Agriculture was

likely to be absent from the city; the executive, therefore, decided to at once wait on the honorable gentleman and respectively urge that the annual grant to the Swine Breeders' Association for 1896 be $1,200 and that to the Sheep Breeders' Association $1,500, an increase in the former case of $75 over last year, and in the latter case of $249. The result of the interview has already been presented to you in a separate article. All present at the interview were exceedingly pleased with the reception accorded them by the Minister of Agriculture. While he did not promise the grants asked, the hon. gentleman's manner and words showed that he had a broad and complete knowledge of the needs of the agricultural class, and that his sympathies were with the farmers and his best efforts spent in their service. The deputation were given to understand that while he intended to continue the strictest economy in the conduct of his Department, he did not intend any division of the work to stand still. He further stated that the associations receiving grants from the public funds will be required in the future, as in the past, to return to the people full value for every dollar entrusted to them. After interviewing the Minister the members returned to the Palmer House, and resumed business.

A letter addressed to the secretary by Mr. Wm. Jones was read. The writer asked that the prize list for the provincial winter show be amended, adding a section for "pigs under six months," in each of the pure-bred classes; as the prize list now stands sows and barrows under six months show in one class. Mr. Jones desired a class for sows and one for barrows.

Moved by Mr. Geo. Green, seconded by Mr. J. C. Snell, that the prize list for 1896 remain as published. Carried.

A letter was read from Mr. John Kelly pointing out that Hampshire and Suffolk sheep were classified together in the prize list of the winter show; also a letter from Mr. W. M. Smith, suggesting a classification for Merinoes.

Moved by Mr. J. I. Hobson, seconded by Mr. D. G. Hanmer, that Hampshires and Suffolks form class fifteen, and that Dorsets and Merinoes form class fourteen in prize list of Provincial Show for 1896.

A letter was read from Mr. R. Gibson suggesting a change in the color of ribbons given to prize winners. On motion it was resolved that red indicate first prize; blue, second prize; white, third prize; green, fourth prize; Yellow, fifth prize.

By resolution the following motion was carried: That there be no sweepstake prizes offered for best ewe or wether in the pure-bred class, at the provincial winter show for 1896.

Moved by Prof. Day, seconded by Mr. Jas. Tolton, that the prize list as revised be the official list for the sheep and swine departments for the provincial winter show of 1896. Carried.

The following letter received from the hon. the Minister of Agriculture was read:

"Department of Agriculture of Ontario.
Toronto, February 10, 1896.

F. W. Hodson, Esq.

Dear Sir,—Referring to your recent communication relating to the matter of remuneration for the registrar of live stock, I beg to suggest that, by way of compro nise, Mr. Wade for the present year receive twenty-five cents per pedigree, said sum to cover postage and the work connected with the office, which I believe has been specially stipulated by your Association.

I trust under the circumstances that your Association may consent to this arrangement, as it will bring all the registration into one office, which I think breeders of live stock will see is very desirable if we are to undertake the present arrangement at all. I shall be glad to learn that your executive committee, or such other body as may have charge of the matter, approve of my suggestion.

Yours very truly,

(Sgd.) John Dryden,
Minister of Agriculture."

The communication referred to by the Minister was a copy of the minutes of the Directors' meeting held in Woodstock in which the Association offered Mr. Wade twenty cents per pedigree and ten cents per transfer to perform all clerical work on the lines laid down by the directors, Mr. Wade to furnish all postage and stationery.

Moved by Mr. SNELL, seconded by Mr. GREEN, that this Association accept the proposition made by the Minister of Agriculture, and that the Secretary be instructed to write the directors not present advising them of the action now taken and respectfully requesting each to consent thereto. Carried.

On motion the following gentlemen were appointed a committee to finally deal with this question: Messrs. J. E. Brethour, J. I. Hobson, J. C. Snell, G. E. Day and F. W. Hodson.

Moved by Mr. GREEN, seconded by Mr. SNELL, that the Minister of Agriculture be most respectfully requested to vest in this Association all volumes of swine records, whether American, Canadian or English, which are now in the office of the Registrar of Live Stock, and that all volumes of said swine records accruing hereafter in said office be also the exclusive property of this Association. Carried.

On motion of Mr. GREEN, seconded by Mr. SNELL, Mr. Green's motion passed at the last meeting of the directors was amended by adding the following words, "unless said member otherwise request." Carried.

On motion by Mr. SNELL, seconded by Mr. GREEN, Mr. Snell's motion passed at the last meeting of the directors was amended by adding the following clause: "Except in the case of imported animals the pedigrees of which shall be published in full." Carried.

Moved by Mr. TOLTON, seconded by Mr. HANMER, that Mr. John I Hobson be added to winter show committee of Sheep Breeders Association. Carried.

A copy of the following letter was immediately sent to each officer and director of of the Swine Breeders' Association not present at the executive meeting:

"GUELPH, ONT., February 20, 1896.

DEAR SIR,—Please find enclosed a copy of the minutes of the executive meeting of the Dominion Sheep and Swine Breeders' Associations. Are you willing that the committee appointed agree to the proposition made by the Minister? An immediate reply respectfully requested.

Very truly yours,

(Sgd.) F. W. HODSON."

In due time replies were received. Each of the officers heartily accepted the proposition made by the Hon. John Dryden.

EXECUTIVE MEETING.

On March 25th, Joseph Brethour, President, J. C. Snell and F. W. Hodson, met Mr. Wade in his office and signed the following agreement:

AGREEMENT.

Memorandum of agreement made this first day of January, in the year one thousand eight hundred and ninety-six, between the Dominion Swine Breeders' Association, hereinafter called the "Association," of the first part, and Henry Wade, of the city of Toronto, in Ontario, Esquire, of the second part.

1. Whereas it having been agreed between the parties hereto that the party of the second part shall become the Recording Secretary of the Association, and in pursuance thereof the Association agrees to employ, and the party of the second part agrees to serve the Association in the said office of Recording Secretary thereof upon the terms, conditions and agreements as are hereinafter expressed and contained,

2. The powers, duties and privileges of the party of the second part as Recording Secretary shall be (excepting any privileges to the party of the second part herein expressly provided) at all times subject to the control and direction of the Association.

3. There shall be a separate division for the records of each of the different breeds of swine, of which records are to be kept by the Association, but no new division shall be opened by the Recording Secretary until authorized by the Association.

4. The rules for entry of records in each division and all printed or other forms to be used by the party of the second part shall be only such as are authorized by the Association, and as the same may be altered or amended from time to time by the Association.

5. All transfers shall be recorded in the same manner as at present adopted by the American Shropshire Association unless the Association shall otherwise direct.

6. All the publications of the Association shall be under the control and direction of the Association, and of an editing committee to be appointed for each of the different breeds, but all the clerical work in the preparation of any such publications, including the index, the transfers, the preparing and arranging of the matter and the comparing and proof-reading of the printed matter, shall be done and performed as the Association may from time to time direct by said party of the second part.

7. In the published volumes of the Record, the name and number of the animal shall be given; also, the date of birth; the breeder's name; the owner's name; the name, number and breeder of the sire; the first dam's name, number and breeder; her sire's name, number and breeder; and the pedigree shall end there, but on the certificate shall be extended in full. The case of imported animals shall be an exception, their pedigrees shall be published in full.

8. The party of the second part shall prepare, as before provided, the volumes of the records for publication when and as he may be required so to do by the Association.

9. All volumes of the English, American or Canadian records from and after this date received as exchanges by the party of the second part, shall be the property of the Association, but the same shall be retained by the party of the second part for use by him during the currency of this agreement. And the party of the second part shall be entitled to be repaid from time to time by the Association, all moneys disbursed by himself thereon in respect of the freight or carriage, customs duty or other necessary expenses.

10. The party of the second part shall receive and be paid the following fees:

(*a*) For each pedigree recorded and published in future volumes of the Association, commencing with volume No. 7, twenty-five cents.

(*b*) For each transfer so recorded and published, ten cents.

11. It shall be the duty of the party of the second part in addition to other duties herein specially provided:

(*a*) To receive and register and keep proper records of all pedigrees and transfers, and with all reasonable dispatch to issue certificates of such registration or transfers and forthwith to send the same by mail, with postage prepaid, to the owner of the animal registered, or to such other person as such owner may direct.

(*b*) To provide and furnish free of any expense to the Association, all necessary assistance, all necessary printed blank forms or other forms required, as directed by the Association. All office stationery, all postage stamps required to properly carry on the work of the office, and all other officee quipments of every kind soever.

(*c*) To receive and give receipts for any membership fees or any other funds of the Association which may be tendered to him.

(*d*) To render to the Association on or before the fifth day of each and every month a statement of all moneys received by him under the preceding subsection "C" or otherwise, and of all moneys paid by him for any purposes whatsoever for or on account of the Association, up to and including the last day of the next preceding month.

(*e*) To make the Association such monthly or other reports upon any matters as the Association may require.

(*f*) To pay over to the treasurer of the Association all moneys of the Association, from time to time, as may be directed by the Association.

12. It is hereby declared that any of the powers or privileges of the Association as hereinbefore provided, may be exercised by the Executive Committee, for the time being, of the Association, and any such exercise of such powers or privileges by the said Executive Committee, shall for the purposes of their agreement be deemed to be the action of the Association.

13. This agreement shall continue in force until determined as in the next section provided, and upon such determination of the agreement, the party of the second part shall deliver up and hand over to the Association, all property of the Association then in his possession or control.

14. Either party may terminate this agreement by giving to the other party three months notice thereof in writing.

15. And for the due performance of all and each of the covenants, provisions and agreements herein contained, each of the parties hereto doth covenant, promise and agree with the other party hereto.

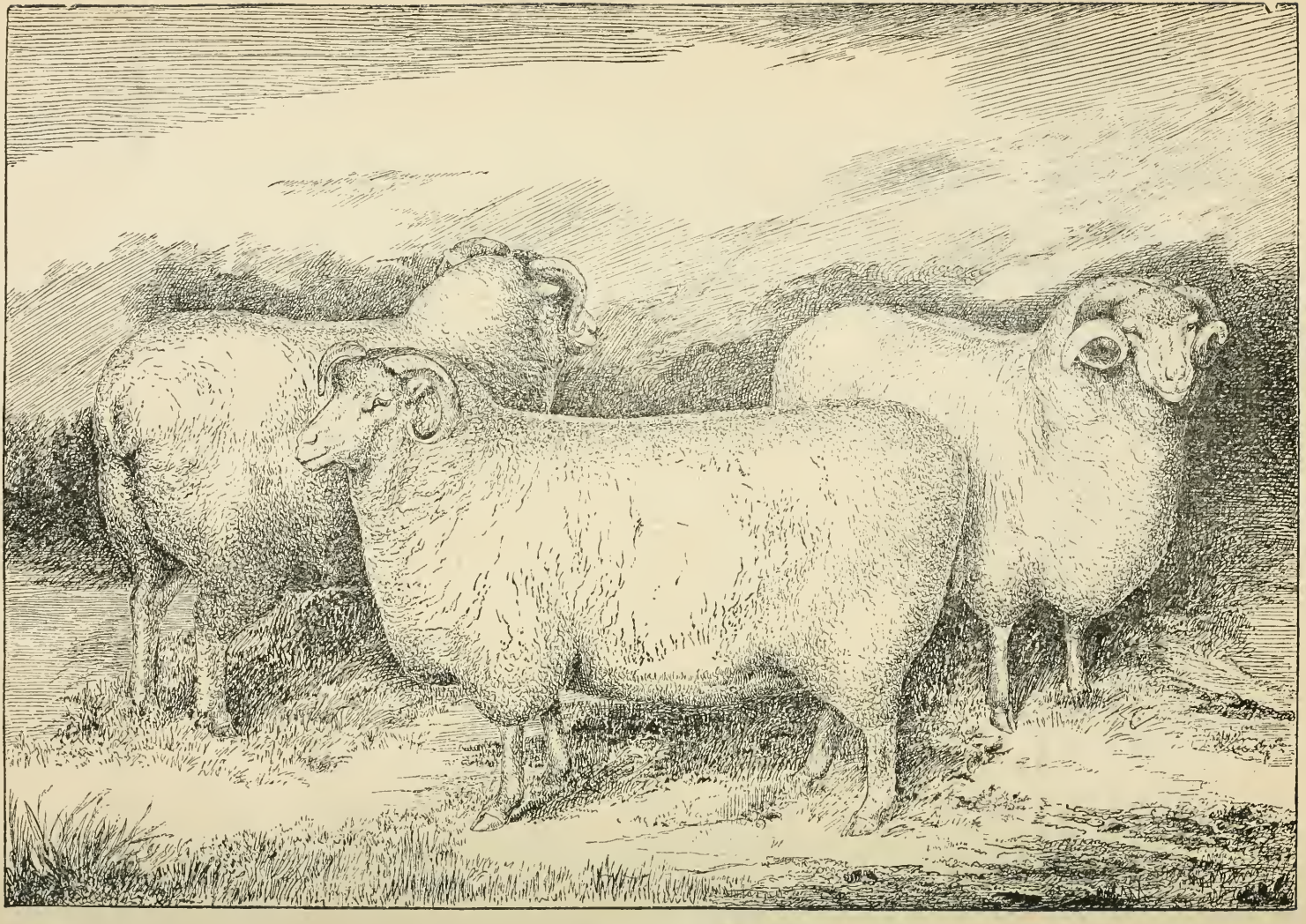
In witness whereof the official seal of the party of the first part and the hands of the proper officers thereof, and the hand and seal of the party of the second part, have hereunto been set.

In the presence of
J. C. Snell.

(Signed) J. E. Brethour, President.
F. W. Hodson, Secretary.
H. Wade, Registrar.

SEPTEMBER MEETING.

On Tuesday, September 10th, 1895, at 7.30 p.m., the officers and directors of the Dominion Swine Breeder's Association convened to consider the report of the committee appointed at the last annual meeting of the Association to consolidate the by-laws and re-draw the constitution of this Association. At 8 p.m. the members of this Association convened to consider the report of the officers and directors on said constitution and by-laws. The result of these meetings was, that the constitution and by-laws for the Swine Breeders' Association are the same as those adopted by the Cattle Breeders' Association (see report of Dominion Cattle Breeders' Association, page 17) with the exception that where the word "cattle" occurs in the preamble, or the constitution and by-laws, it was changed to read "swine." The following clause was added to by-law 37 : "And animals bred by him or in which he is interested shall not be recorded in records controlled by this Association;" and in clause 5 "the membership fee is two dollars per year."



DORSET HORNS.

EIGHTH ANNUAL REPORT

OF THE

DOMINION SHEEP BREEDERS' ASSOCIATION,

1895-6.

To the Honorable the Minister of Agriculture :

I have the honor to submit herewith the annual report of the Dominion Sheep Breeders' Association.

Your obedient servant,

F. W. HODSON,
Secretary.

LIST OF OFFICERS FOR 1896.

President ..... JAMES TOLTON, Walkerton.
Vice-President ..... D. G. HANMER, Burford.
Secretary-Treasurer ..... F. W. HODSON, Guelph.

Directors:

Cotswolds ..... J. C. SNELL, Snelgrove.
Leicesters ..... ALEX. SMITH, Maple Lodge.
Southdowns ..... T. C. DOUGLAS, Galt.
Shropshires ..... R. GIBSON, Delaware.
Oxfords ..... HENRY ARKELL, Arkell.
Hampshires ..... JOHN KELLY, Shakespeare.
Lincolns ..... JOHN GIBSON, Denfield.
Dorsets ..... R. H. HARDING, Thorndale.
Merinoes ..... W. M. SMITH, Fairfield Plain.

General Director ..... JOHN I. HOBSON, Mosboro'.
Auditors ..... GEO. E. DAY, O. A. C., Guelph.
ANDREW WHITLAW, Guelph.

DELEGATES TO FAIR BOARDS.

Toronto ..... JAS. RUSSELL, Richmond Hill; J. C. SNELL, Snelgrove.
Ottawa ..... J. YUILL, Carlton Place.
Montreal ..... DANIEL BRIMS, Athlestan, Que.
London ..... R. H. HARDING, Thorndale; ALEX. SMITH, Maple Lodge.
Kingston ..... ALF. BROWN, Picton.
Peterborough ..... ROBERT VANCE, Ida.
Belleville ..... J. C. HANLEY, Belleville.

EXPERT JUDGES.

Cotswolds: J. C. Snell, Snelgrove; Wm. Thompson, Uxbridge; Thos. Teasdale, Concord; James Russell, Richmond Hill; Jas. Main, Milton; Heber Rawlings, Ravenswood; V. Ficht, Oriel; Geo. Weeks, Glanworth; T. Hardy Shore, Glanworth; W. G. Laidlaw, Willow Grove; D. McCrae, Guelph; B. H. Frink, Napanee; Jno. Thompson, Uxbridge; Peter McGregor, Marmora; W. Rae, Arkell; Wm. Ward, Uxbridge; Arthur Johnston, Greenwood; Joseph Ward, Marsh Hill.

Leicesters: R. Eastwood, Mimico; R. Hastings, Wingham; Andrew Thompson, Fergus; J. K. Campbell, Palmerston; Wm. Tindall, Fergus; J. C. Snell, Snelgrove; Jos. Snell, Snelgrove; Henry Allen, Newcastle; John Gibson, Denfield; Wm. Cowan, Galt; Clarence Wood, Freeman; Jos. Gaunt, St. Helen's; Jas. Gaunt, St. Helen's; J. M. Gardhouse, Highfield; John Laidlaw, Willow Grove; Andrew Whitlaw, Guelph; Wm. Whitlaw, Guelph; R. G. Garbutt, Belleville; R. C. Martin, Marysville; Alex. Smith, Maple Lodge; A. Easton, Appleby.

Dorsets: G. P. Everett, Mount Vernon; John Jackson, Abingdon; Richard Gibson, Delaware; J. C. Snell, Snelgrove; W. H. Beattie, Wilton Grove; T. I. Cooper, Coopersburg, Pa.; M. A. Cooper, Washington, Pa.

Southdowns: John Miller, Markham; R. L. Burgess, Burgessville; Arthur Simenton, Blackheath; Wm. Martin, Binbrook; Thos. Wilkinson, Hamilton; Richard Gibson, Delaware; John Jackson, Abingdon; T. C. Douglas, Galt.

Oxfords: Geo. McKerrow, Sussex, Wis.; W. A. Shafor, Middleton, Ohio; Aaron Bordwell, Fargo, N.Y; G. J. Campbell, Pittsfield, Ohio; Henry Arkell, Teeswater; R. J. Hine, Dutton; R. C. Birdsall, Birdsall; Arch. McKenzie, Corwhin; S. Evans, Gourock; James Tolton, Walkerton; Peter Arkell, Teeswater; Jno. Cousins, Harriston; Jno. Harcourt, St. Ann's; Frank Shore, Toronto; Henry Arkell, Arkell; Wm. Dickinson, Mildmay.

Hampshires: Jas. Main, Milton; John Jackson, Abingdon; John Kelly, Shakespeare.

Shropshires: Richard Gibson, Delaware; G. P. Everett, Mount Vernon; J. Conworth, Paris; W. H. Beattie, Wilton Grove; A. Brown, Picton; R. Miller, Brougham; Jas. Hanmer, Mount Vernon; Jas. McFarlane, Clinton; Jas. Cooper, Kippen; T. M. Whitesides, Innerkip; J. Campbell, Woodville; D. G. Hanmer, Burford; Jas Phin, Hespeler; M. Levering, Lafayette, Ind.; S. H. Todd, Wakeman, Ohio; A. Elliot, Galt; J. Dickin, Milton West.

Toronto: S. H. Todd and J. Conworth; reserve, J. McFarlane.
London: T. M. Whitesides and A. Elliot; reserve, J. Dicken.
Montreal: G. P. Everett and Mr. Dawes, Lachine, Que.
Ottawa: A. Brown, D. G. Hanmer and Jos. Barnett, Rockland.
Kingston: D. G. Hanmer, Burford.
Belleville: Jno. Campbell, Woodville.

Lincolns: James Brooks, Blanshard; Ernest Parkinson, Eramosa; J. C. Snell, Snelgrove; Jno. Geary, London.

LIST OF MEMBERS OF THE SHEEP BREEDERS' ASSOCIATION FOR 1895 AND 1896.

Name.	Address.	Class.
Arkell, Peter	Teeswater, Ont	Oxfords.
Arkell, Henry	Teeswater, Ont	Oxfords.
Armour, Andrew	Dunnville, Ont	Leicesters.
Arkell, Henry	Arkell, Ont	Oxfords.
Armstrong, Geo. B	Teeswater, Ont	Leicesters.
Brown, Alfred	Picton, Ont	Shropshires.
Beattie, W. H	Wilton Grove, Ont	Shropshires.
Blais, A. & J	Glen Sandfield, Ont	Leicesters.
Birdsall, F. & Son	Birdsall, Ont	Oxfords.
Bowman, Jas	Guelph, Ont	Dorsets.
Bonnycastle, F. & Sons	Campbellford, Ont	Cotswolds.
Burns, J	King, Ont	Leicesters.
Burgess, R. L	Burgessville, Ont	Southdowns.
Campbell, John	Woodville, Ont	Shropshires.
Crookshanks, Fred	Lion's Head, Ont	
Currelly, T. & Son	Fullarton, Ont	Leicesters.
Conworth, Jno	Paris, Ont	Shropshires.
Coxworth, S	Whitby, Ont	Cotswolds.
Cooper, Jas. & Son	Kippen, Ont	Shropshires.
Campbell, J. & J. K	Palmerston, Ont	Leicesters.
Calder, Chas	Brooklin, Ont	Shropshires.
Cousins, Jno. & Son	Harriston, Ont	Oxfords.
Cameron, Thos	Botany, Ont	Southdowns.
Dale, David	Glendale, Ont	Southdowns.
Dickeson, Wm	Mildmay, Ont	Oxfords.
Douglas, T. C	Galt, Ont	Southdowns.
Dickin, John	Milton West, Ont.	Shropshires.
Donaldson, W	South Zorra, Ont	Shropshires.
Davies, Robt	Queen Street East, Toronto	Shropshires.
Dryden, Hon. John	Toronto, Ont	Shropshires.
Errington, Fred	Glanworth, Ont	Shropshires.
Elliott, A	Galt, Ont	Shropshires.
Ewing, J. B	Dartford, Ont	Shropshires, Berkshires.
Everett, G. P	Mt. Vernon, Ont	Shropshires.
Evans, Smith	Gourock, Ont	Oxfords.
Frink, B. H	Napanee, Ont	Cotswolds.
Frear, Alex	Ithaca, N.Y	Southdowns.
Ficht, Vanentine	Oriel, Ont	
Geary, John	London, Ont	Lincolns.
Grey, Allan	Uxbridge, Ont	Cotswolds.
Gibson, John T	Denfield, Ont	Lincolns.
Gowaulock, Robt	Maple Hill, Ont	Oxfords, Leicesters.
Gardhouse, J. & Son	Highfield, Ont	Leicesters.
Garnham, E. A	Staffordville, Ont	Leicesters.
Gould, G., Sr	Rutherford, Ont	Lincolns.
Ganton, D. G	Elmvale, Ont	Shropshires.
Hine, H. J	Dutton, Ont	Oxfords.
Hawkshaw, W. S	Glanworth, Ont	Shropshires.
Hallam, John	Toronto, Ont	Dealer hides, etc.
Hanmer, D. G	Burford, Ont	Shropshires.
Harding, R. H	Thorndale, Ont	Horned Dorsets.
Hobson, John I	Mosboro', Ont	Shorthorns.

LIST OF MEMBERS OF THE SHEEP BREEDERS' ASSOCIATION.—*Concluded.*

Name.	Address.	Class.
Humphrey, E	Thamesford, Ont	Lincolns.
Hunter, John	Wyoming, Ont	Horned Dorsets.
Hannah, Alexander	Byng, Ont	Leicesters.
Hastings, Robt	Wingham, Ont	Leicesters.
Howatt, G	Lyndon Centre, Vt	
Holtby, R. M	Manchester, Ont	Dorsets, Tamworths.
Jackson, John	Abingdon, Ont	Southdowns.
Kelly, John	Shakespeare, Ont	Hampshires, Leicesters.
Ketchen, A. P	O. A. C., Guelph, Ont	
Legge, Joshua	Gananoque, Ont	
Laidlaw, W. G	Wilton Grove, Ont	Cotswolds.
Laidlaw, John	Wilton Grove, Ont	Leicesters.
Lea, H. F	Redwood, Ont	Horned Dorsets.
Martin, Wm	Binbrook, Ont	Southdowns.
Martin, R. G	Marysville, Ont	Leicesters.
Miller, R	Brougham, Ont	Shropshires.
Metler, Peter	North Pelham, Ont	Southdowns.
Moyer, D. H	Campden, Ont	Shropshires.
McGillivray, Jno. A	Uxbridge, Ont	Horned Dorsets.
McFarlane, Jas	Clinton, Ont	Shropshires.
McKellar, John	Avonton, Ont	Horned Dorsets.
Oliver, Wm	Avonbank, Ont	Lincolns.
Ontario Agricultural College	Guelph, Ont	
Orr, John	Galt, Ont	Leicesters.
Patteson, T. C	Toronto, Ont	Shropshires.
Phin, J. P	Hespeler, Ont	Shropshires.
Parkinson, Ernest	Eramosa, Ont	Lincolns.
Russell, Jas	Richmond, Ont	Cotswolds.
Rutherford, John	Rosevale, Ont	Southdowns.
Robson, Capt Thos. E	Ilderton, Ont	Lincolns.
Rawlings, Heber & Sons	Ravenswood, Ont	Cotswolds.
Stephens, R. W	Lambeth, Ont	Lincolns.
Simmons, C. W	Ivan, Ont	Berkshires, Shorthorns.
Simenton, Arthur	Blackheath, Ont	Southdowns.
Smith, W. M. & J. C	Fairview Plains, Ont	Merinoes.
Snell, J. C	Snelgrove, Ont	Cotswolds.
Snell, J. G. & Bro	Snelgrove, Ont	Cotswolds.
Slater, J	Buttonville, Ont	Cotswolds.
Shore, Hardy	Glanworth, Ont	Cotswolds.
Storm, Peter	Sherkston, Ont	Oxfords.
Smith, J. S	Maple Lodge, Ont	Leicesters.
Tolton, Jas	Walkerton, Ont	Oxfords.
Telfer, A. & Sons	Paris, Ont	Shropshires.
Thompson, Wm	Uxbridge, Ont	Cotswolds.
Thompson, Jas	Mildmay, Ont	Suffolks.
Tirrell, A	Wooler, Ont	Oxfords.
Whitesides, T. M	Innerkip, Ont	Shropshires.
Whitlaw, Wm	Guelph, Ont	Leicesters.
Wightman, Robt	Owen Sound, Ont	Little's Tick Destroyer.
Wilkinson, J. T	Chilliwack, B.C	Southdowns.
Wright, W. E	Glanworth, Ont	Shropshires.
Weeks, Geo	Glanworth, Ont	
Whitlaw, Andrew	Guelph, Ont	Leicesters.
Wood, C. E	Freeman, Ont	Leicesters.

ANNUAL REPORT

OF THE

DOMINION SHEEP BREEDERS' ASSOCIATION,

1895.

The eighth annual meeting of the Dominion Sheep Breeders' Association convened in the City Hall, Guelph, on the 10th of December, 1895, President John Jackson in the chair. After the address of the President, the reports of committees appointed at the last annual meeting were received.

In the absence of Mr. John I Hobson, chairman, Mr. RICHARD GIBSON reported for the Railway Committee. After discussion by a number of members, it was resolved, "that Messrs. John I. Hobson, Richard Gibson, J. C. Snell and D. G. Hanmer be a committee to draft a series of resolutions to be submitted to the railroad authorities at Montreal."

The report of John Jackson and James Tolton, the fat stock committee, was published in the last annual report. (See pages 111 and 112.)

The report of the programme committee was given by Mr. J. C. Snell, endorsing the programme issued by the secretary.

It was brought to the notice of the Association by the secretary that Mr. Hill wished to obtain the feeling of the breeders regarding keeping stock two weeks at the Toronto Industrial. On motion it was unanimously resolved "That the Sheep Breeders' Association expresses its strong disapproval of same, and are fully satisfied it would prove an injury to the interests of the breeders and be detrimental to the health of the flocks exhibited."

It was moved by RICHARD GIBSON, seconded by D. G. HANMER, and carried unanimously, "That the directors of the Toronto Industrial be respectfully requested to provide better ventilation in the sheep pens and also more suitable facilities for ascending to the lofts."

It was unanimously resolved, "That we believe it to be in the interest of sheep husbandry that some plan be devised for the improvement of judging sheep at district, county and township fairs, and that Richard Gibson, D. G. Hanmer and John Campbell be a committee to devise plans and report at the next annual meeting of the Association."

It was moved by RICHARD GIBSON, seconded by D. G. HANMER, and carried unanimously, "That in order that a suitable exhibition be held in London, it is very necessary that the prize list for sheep be enlarged and that better pens be constructed, and that this Association heartily commends the action of the Western Fair Board in asking for a bonus to enable them to carry out this work, and that a copy of this resolution be forwarded to the secretary, Thomas A. Brown."

J. C. Snell and Richard Gibson were elected delegates from this Association to the Dominion Live Stock Association. Delegates to fair boards, etc., for 1896 were then elected. (See page 72.)

PRESIDENT'S ADDRESS.

The President, Mr. JOHN JACKSON, then delivered the following address :

Gentlemen of the Sheep Breeders' Association :

It affords me much pleasure to meet you again at this our annual meeting, and to congratulate you upon the continued harmony and prosperity of our Association, due to the united efforts of its members. I am also pleased to notice the marked improvement in the flocks of Ontario sheep breeders of recent years. In reviewing the flocks of different breeds at the various large shows there is one feature that forcibly presents itself to every careful observer, that is the marked improvement in our home-bred sheep. To encourage this has been the aim of our Association, and promising, indeed, are the results already attained. A few years ago it was very easy, after looking over the sheep exhibit at any of our shows, to point out every imported animal. There is not now that contrast which rendered it thus easy to draw the line between imported and home-bred sheep. Even an expert judge would hardly like to risk his reputation by undertaking the task.

Another important change which has been effected through the efforts of our Association is the better class of judges we now have at all our shows, as compared with those of years gone by.

Then, too, it is very gratifying to know that, notwithstanding the depression in nearly every line of agricultural production, the demand for first-class, pure-bred, registered sheep has been good, and remunerative prices obtained therefor. Wool, although a secondary consideration, has advanced in price, which helps to stimulate the trade in good sheep. I say *good* sheep, because *only* good sheep will yield the best returns.

The possibilities of our country for producing a high class of sheep are very great. We have a soil and climate admirably adapted to sheep-raising, while our farmers are quite qualified to utilize these natural advantages.

We have but to recall our well-earned victories at the great World's Fair, Chicago, only two years ago, to establish our standing as producers of a grand class of sheep. Nor need we go so far back. Just two weeks ago, at the show in Madison Square Garden, New York City, held under the auspices of that aristocratic body, the "Live Stock Association of America," the Canadian exhibit of sheep was decorated with honors. Out of $1,000 offered in the fat stock classes, Canada (Ontario) won $945. What more could we ask ?

What has been said of that show is corroborated by the grand display of sheep at our own winter show.

Now, without encroaching further upon your time, we will proceed to carry out the programme we have before us.

REPORTS OF REPRESENTATIVES TO FAIR BOARDS.

Montreal.

I beg to report that when in Montreal I called on Mr. S. C. Stevenson, manager and secretary of the Montreal Exposition Co., by whom I was well received, but finding the contemplated prize list a very complete one, and not having received the Constitution and By-laws of the Association, with recommendations as enclosed with your favor of 2nd inst., did not find that there was much opportunity to make suggestions, and was unable to attend committee meetings at so great a distance from home, consequently have no statement of expenses to present.

In view of the recent action of the British Government in ordering the slaughter of all Canadian sheep on landing, and the recommendations of Professor Robertson at Waterloo within the last few days in regard to the establishment of the dressed meat industry on a firm basis by the Canadian Government, it behooves the sheep breeders of Canada to redouble their efforts to make this Dominion what Nature intended it to be, the greatest mutton producing country in the world. The healthfulness of the climate, pure water, sweet grass, abundant forage crops, hay, oats, peas, flax-seed and above all our magnificent root crops enable us to produce mutton unequalled outside of Great Britain, in quality, juiciness and flavor, while our breeders have frequently at the Chicago Fat Stock Shows, the World's Fair and the recent live stock show in New York, shown that we not only have the best English breeds but the knowledge and skill without which they could not be brought out in such perfection.

Not long since a writer in the London Live Stock Journal quoted statistics from the examination of many thousands of sheep in Germany, showing that tuberculosis was almost unknown, which fact, if generally known, would undoubtedly cause mutton to take the place, to a great extent, of inferior beef.

Canadian mutton and lambs enjoy a high reputation in the Eastern States, and if all that are exported were properly finished on rape and roots they would put thousands of dollars more into the farmers' pockets than they do at present. What is wanted is scores of men in every neighborhood, and hundreds in every district, all producing a first-class article, with the scrubs fading away into an ever diminishing minority, and then we might have lamb fairs and ram sales such as are held at St. Boswells and at different points all over Great Britain. As a small beginning in the direction of local fairs, which I believe have been largely instrumental in helping the British farmers by bringing them in contact with each other, as well as by bringing buyer and seller together ; I would suggest the giving of prizes at all exhibitions, the smaller ones in particular, for pens of five grade lambs, ewes or wethers, say five prizes of such amounts as would be likely to induce a large number of entries and attract buyers.

It would be a great help if minor or branch associations could be formed in all the districts of each Province, as so many are too far away to attend the annual meetings.

Jas. A. Cochrane.

Peterborough.

I beg to report that the sheep exhibit at the Peterborough fair, which I attended on the 23rd, 24th and 25th September, was the best ever seen in Peterborough. This, no doubt, is a result of increased prizes and a growing interest in the sheep industry. The pens are good but were found insufficient to accommodate the large exhibit of this year. Only one judge, Mr. Arthur Johnston, was appointed and gave general satisfaction I attended several of the Board meetings, and as your delegate was well received. The Board always seemed willing to adopt your suggestions where at all possible.

Robert Vance.

London.

The Board received us with the consideration due representatives of our Association, and seemed anxious to carry out any suggestions we made, so long as they were within their prescribed allotments of money to the sheep classes. We urged larger prizes and better accommodation for sheep, both of which they acknowledged desirable and promised to provide when funds were available.

A. W. Smith.

Agreeable to the call of the secretary of the Western Fair Board, I attended the annual meeting, and before the adoption of the report I called attention to the fact that notwithstanding the representation made the previous year, the accommodations for sheep and swine were no better. I also urged that the prize list, instead of being cut down, should in all justice, and also in the Association's interest, be increased, with what effect, you who are exhibitors know. We were received cordially, but at the same time one felt as though he were a poor relation, on sufferance as it might be—"We are glad to see you, but don't be too obtrusive." I made an appeal for more pens and better accommodation, as well as for a more systematic grouping. But of what avail? Swine and sheep were indiscriminately mixed. A bold, bad Berkshire was wasting his sweetness on the desert air, endeavoring to captivate a buxom Cotswold maiden; and a dusky Oxford lass was casting sheep's eyes at a bashful young Yorkshireman, whilst the Lincolns for some misconduct were banished to the horse stalls. For genuine downright misarrangement and lack of system or order, commend me to the Western Fair sheep and swine department.

As long as the Board decide to keep open their books until the last moment, they can form no estimate as to how many pens will be wanted. But it is not my duty or inclination to show them how their show should be run. It is easy to talk on the matter, but surely it would not be difficult to get a superintendent that would keep the sheep and swine apart, and that would give the swine the planked pens and the sheep those not floored.

R. Gibson.

Ottawa.

I attended a meeting of the Ottawa Fair Board in the interest of the Sheep and Swine Breeders' Association on the 14th of May last and was kindly received; in fact, they were delighted to see that the sheep and swine breeders took so much interest in the work that they would send a man to help them. I was not able to accomplish very much in the sheep classes, but I got the prizes in the swine department somewhat increased, and a class added for Tamworths.

Jos. Yuill.

Toronto.

As one of the delegates of the Dominion Sheep Breeders' Association at the Toronto Industrial Exhibition Board for the current year, I beg leave to report that the delegates are well received by the Board of Directors, who give courtous and careful consideration to all suggestions and recommendations, and are disposed to meet the wishes of the stock breeders and exhibitors as far as they consistently can with the means at hand and the many interests they have to consider. The prize list has been maintained in fairly satisfactory condition. The judges were selected from the list recommended by our Association, and we believe gave fair satisfaction.

The directors of the exhibition are entitled to the warmest thanks of this Association and of exhibitors for the splendid new buildings erected on their fair grounds for the accommodation of the exhibits of sheep. Their buildings are probably the best sheep pens on any fair ground in America, and are a credit to all concerned. The exhibit of wool, I regret to say, was not what it should have been, and if Ald. Hallam continues the offer of prizes so generously given by him this year, we hope that breeders will prepare to make a show of wool more worthy of the great industry they represent.

J. C. Snell.

As a delegate to the Toronto Fair Board, I found the managers willing to make any reasonable change or improvement in the prize list, but as they have been at a large expense in new buildings for sheep this year, a better prize list could not be expected. The principal recommendation that I would make, is a full prize list for sheep bred and owned by the exhibitor.

James Russell.

A KENTISH RAM.

A LINCOLN RAM.

DIRECTORS' MEETING OF THE DOMINION SHEEP BREEDERS' ASSOCIATION.

A directors' meeting of the Dominion Sheep Breeders' Association was held in Woodstock on Wednesday, the eighth day of January, 1896, the president, M. James Tolton, in the chair. The minutes of the last meeting were read by the secretary, and on motion of Mr. HARDING, seconded by Mr. Henry ARKELL, were adopted.

A letter from Mr. Wm. Oliver and a communication from Mr. John Gibson were read.

Moved by Mr. GIBSON, seconded by Mr. OLIVER, that James Brooks, Blanshard; Ernest Parkinson, Eramosa; J. C. Snell, Snellgrove, and John Geary, London, be the judges of Lincolns for the ensuing year. Carried.

The treasurer's report was submitted, and on motion of Mr. SNELL, seconded by Mr. KELLY, the report was adopted.

FINANCIAL STATEMENT.

Receipts.

Members' fees	$ 96 00
Legislative grant	850 00
Entry fees, fat stock show	114 00
Total	$1,060 00

Expenditure.

Balance due treasurer as per last statement	$ 54 99
Expenses for meetings	87 32
Officers' salaries	100 00
Postage and stationery	58 70
Printing	96 87
Cost of reporting meetings	41 25
Cash paid for prizes	414 00
Auditing books	6 00
Duty	25
Express	1 40
Addressing wrappers	1 50
Telegraph	70
Total	$862 98
Balance on hand December 31st, 1895	$197 02

The secretary's report, similar to that read before the Swine Breeders' Association (see page 54), was submitted to the meeting, and on motion of Mr. HARDING, seconded by Mr. T. C. DOUGLAS, it was received and taken up clause by clause.

WHAT SHALL WE DO WITH OUR SHEEP RECORDS?

The feeling of the meeting was, that Canadian sheep records should be discontinued.

FAT STOCK SHOW.

Moved by Mr R. GIBSON, seconded by Mr. A. W. SMITH, that if action be taken by other associations towards holding a Provincial show, steps be taken by this Association to amalgamate with them. Carried.

Moved by Mr. HARDING, seconded by Mr. J. C. SNELL, that section 5, "The best three ewes under one year," and section 7, "The best five sheep under two years," be struck out of each class. After much discussion this motion was carried.

On motion, classes for the following breeds were formulated with a prize list in each class amounting to $145: Cotswolds, Lincolns, Leicesters, Oxfords, Shropshires, Southdowns, and a half a class each for Hampshires and Horned Dorsets.

Moved by Mr. HANMER, seconded by Mr. ARKELL, that the two grand sweepstake prizes, heretofore awarded in the sheep department, be struck out. Carried.

Moved by Mr. SMITH, seconded by Mr. DOUGLAS, that a sweepstake prize be granted in each class, for the best sheep in the class, any age or sex, provided a sufficient grant is received from the government to allow this. Carried.

Moved by Mr. HANMER, seconded by Mr. SNELL, that in grade sheep the prizes for "ewes two years old and over," and "wether two years old and over," be struck out, and that the prizes for the three best ewes and for the three best wethers be reduced to $12, $8, $4, in each case, and that sections 9 and 10 be struck out and a section substituted, giving a sweepstake for the best grade sheep under two years old. Carried.

JUDGES.

Cotswolds: Wm. Thompson, Uxbridge; and Jos. Gaunt, St. Helen's. Reserve, E. Parkinson, Eramosa.

Lincolns: E. Parkinson, Eramosa; and Jos. Gaunt, St. Helen's. Reserve, Wm. Thompson, Uxbridge.

Leicesters: Jos. Gaunt, St. Helen's; Wm. Thompson, Uxbridge. Reserve, E. Parkinson, Eramosa.

Shropshires: T. M. Whitesides, Innerkip; and Henry Arkell, Teeswater. Reserve, J. Miller, Markham.

Southdowns: J. Miller, Markham; and Henry Arkell. Reserve, T. M. Whitesides, Innerkip.

Oxfords: Henry Arkell, Teeswater; and J. Miller, Markham. Reserve, T. M. Whitesides, Innerkip.

Horned Dorsets and Hampshires: T. M. Whitesides, Innerkip; and Henry Arkell, Teeswater. Reserve, J. Miller, Markham.

Grades: Wm. Thompson, Uxbridge; and T. M. Whitesides, Innerkip. Reserve, Henry Arkell, Teeswater.

The rules and regulations governing the show were adopted as amended.

ANNUAL MEETING.

Moved by Mr. SNELL, seconded by R. GIBSON, that the annual meeting be held during the Fat Stock Show. Carried.

Moved by Mr. SNELL, seconded by Mr. HARDING, that the secretary's suggestion in his report regarding the literary meeting be adopted, and that the time for holding said meeting be left in the hands of the executive. Carried.

Moved by Mr. RICHARD GIBSON, seconded by Mr. HARDING, that the work of preparing and publishing a standard of excellence be gone on with and prepared for the report of 1896, and that the work be left in the hands of the executive. Carried.

TENT.

Moved by Mr. SNELL, seconded by Mr. SMITH, that the secretary be instructed to occupy a tent as suggested in his report, at the three fairs, viz., Toronto, London and Ottawa. Carried.

Executive Committee and Programme Committee: President, Vice-President, Secretary, and John Jackson, Abingdon.

Winter Show Committee: The President, Mr. R. Gibson, and D. G. Hanmer, were appointed a deputation to wait on the Government to ask for increased grant.

Moved by Mr. SMITH, seconded by Mr. GIBSON, that the executive committee be instructed to draw up a by-law dealing with the question of objections to expert judges. Carried.

SEPTEMBER MEETING.

On Tuesday, September 10th, 1895, at 1 p.m., the officers and directors of the Dominion Sheep Breeders' Association convened to consider the report of the committee appointed at the last annual meeting of the Association to consolidate the by-laws and re-draw the constitution of this Association. At 2 30 p.m., the members of this Association convened to consider the report of the officers and directors on said constitution and by laws. The result of this meeting was, that the constitution and by-laws to be found on page of the report of the Dominion Cattle Breeders' Association was adopted with the following exception : That where the word "cattle" occurs in the preamble, or the constitution and by-laws, it was changed to read "sheep." The following clause was added to by-law 37 : "And animals bred by him or in which he is interested shall not be recorded in any records controlled by this Association." The following by-law was inserted between by-laws 38 and 39 : "It is hereby provided that the sum of $15 will be paid by this Association to any party or parties who furnish proof that will lead to the conviction of any person or persons under by-laws 35, 36, 37, and 38."

CHEVIOT EWES.

APPENDIX A.

PUBLIC MEETING.

A joint meeting under the auspices of the Dominion Sheep, Swine and Cattle Breeders' Associations and the Dairymen's Association of Western Ontario, was held in the City Hall, Guelph, Ontario. Hon. JOHN DRYDEN, Minister of Agriculture for the Province of Ontario, occupied the Chair. When opening the meeting the Chairman said: I am very glad on the present occasion to be permitted to meet so many of the members of the various organizations under whose auspices this meeting is called. These organizations represent different branches of agriculture; they are, perhaps, to some extent entirely distinct from each other, yet I know I am not saying too much when I say with the utmost harmony existing between them. That there is no feeling of jealousy, and that all are ready to rejoice when any advancement is made in any of these branches, is evident. Undoubtedly the dairymen, who I understand are represented on this occasion, have for a number of years had the best of it in comparison with those who have been following other lines of agriculture. The dairy products have maintained their prices with very little variation for many years, but I am sorry to say that during the present year they too have felt the pinch of depression; still, later in the season a change has taken place so that I apprehend the dairymen will go forward to the next year with new hope and courage, and I hope they may meet with similar success to that enjoyed by them in the past.

Our hog products are not in the demand they were a year ago, and therefore breeders feel the effect of it at once. I suppose the same thing might be said with reference to sheep, yet I am glad to say that the breeders of all these different animals are not deterred because of the depression or because of the lower price from keeping up their flocks to the highest quality

No one can go to this exhibition and look at the animals there without realizing that stock breeders are doing first class work along these lines. We certainly are not retrograding, and I think in most cases we are making some advancement The same condition was evident at the New York Show of Live Stock, which was held a few days ago, and which I had the pleasure of visiting three or four times. I found there that some of our sheep breeders had undertaken to champion the Canadian cause at that great show, and as usual they came away with a good many laurels; out of $975 which filled up the class in fat sheep, Canadian sheep breeders were able to bring away $920, (great applause), leaving $55 to be divided among the various American dealers. That reminds us of what occurred in Chicago, and it only shows that breeders in Ontario are keeping up the quality of their live stock, because in a show like that you can win nothing excepting the quality is what it ought to be. There is great danger, when prices are low, of our farmers saying: "It doesn't matter how I feed or breed there is nothing in it anyway." That is false doctrine, and some of us, in our experience, have discovered that it is not sound. I remember years ago when I used to depend upon fat stock on my farm more than I do at present, that when the price was likely to be low, that was the time I desired to do my best, because I realized that if I had animals possessing superior quality I was able to get the cream of the market, whatever it was, while my neighbor who had an inferior article might not be able to sell it at all, or had to take what he could get. If prices are low we must still endeavor to keep the quality to the highest point, otherwise we are certain of meeting with failure.

Now, it is because of such exhibitions as we have here, that we keep before the people these ideals. These exhibitions tend to stimulate our farmers, and perhaps by this means we are aroused to considerable enthusiasm even under the depressed conditions, and I have always advocated and given my support to the holding of these exhibitions. I do not think this Province can afford to do without the fat stock show. (Applause). I do not think this Province can afford to go on in agricultural pursuits without encouraging our farmers and our breeders year by year, and I hope, therefore, this show may continue. It has been gratifying to hold this exhibition in the city of Guelph for a number of years. I would like to say that perhaps there is no city in the Province of Ontario which knows better how to entertain strangers and how to make us feel at home, and to give us a hearty shake of the hand, and to greet us with a heartier cordiality, than the city of Guelph. There is one thing I have against the inhabitants of this city. They say: "We like to see you walking about our streets; we would like to have you spend as much of your money in the city of Guelph as you can, but we do not care to look at those animals." Now I would like to say, especially to the ladies of the city of Guelph, who are very fond of the finest of beef and poultry, and pork, I would like to invite you over to the show in order that you might see the animals walking about, and see what they look like. There is nothing offensive about the show, and I hope to-morrow, and the next day, to see great numbers of the people of the city of Guelph visiting this show. The people who bring these animals here ought to be encouraged, and they will be gratified by seeing persons who do not ordinarily attend, coming in to see what they have. We have a lengthy programme, as you will observe, and I do not intend to detain you at this moment with any further remarks. I happen on this occasion to be monarch of all I survey, and perhaps I may take the opportunity of saying something else during the course of the evening. I now call upon Mr. James Innes, M.P.

ADDRESS OF WELCOME.

Mr. Innes said: I have very great pleasure indeed, in the name of the citizens of Guelph, in extending to all a royal welcome to this Royal City, and I would supplement that also by extending on behalf of the farmers and residents of this district a similar welcome. Many of them I see here to-night, for they, along with the members of the Fat Stock Club, of the city of Guelph, have always taken great interest in our exhibitions and have also worked hard to make them a success. Perhaps some before me to night may not be aware that many years before we had such a Provincial Winter Show as we have now, which I believe is likely to be the best we have ever had in the history of the Association, we had, I do not know for how many years, an annual show of fat stock. Indeed I recollect some ten or twelve years ago being in Ottawa about the end of January and happened to meet Lord Lansdowne, and he said to me, "Mr. Innes, we have been feeding off Guelph for the last month," meaning thereby that the best stock, beef and mutton, came from Guelph; and I might also add the best cheese, for many of you know Guelph Township is celebrated as producing the best Stilton cheese in Canada. (Applause.) We are now holding the twelfth annual exhibition under the auspices of the "Provincial Fat Stock Club," which has been largely assisted by the Associations to which Mr. Dryden has alluded—the Sheep and Swine Breeders' Associations—which have materially supplemented the prize money, and have also for some years held their annual meetings in our city and thereby given additional interest, not only to themselves but also to all those who choose to become members and join in the discussions and profit by information which those discussions afford. I am happy to say on this occasion, in addition to this we have also for the first time the Dairymen's Association of Western Ontario, and I hope that now they have joined with us this will only be the first of a series of meetings. I also wish to mention the pleasure we have in associating with us for the first time the Poultry Association of Guelph. I understand the exhibit to-day is the finest that has ever taken place in Ontario. Indeed, I am informed that the entries

exceed 1,000 in number ; and here I will suggest that it will be for the benefit of the "Fat Stock Club," as well as for the benefit of the Poultry Association of Guelph, if they could see their way to amalgamate, for I believe it would help largely to locate for all time to come the annual Provincial Winter Exhibition in this city. (Applause.)

Another association, I understand, was formed last year of a more extensive nature ; I allude to the Dominion Cattle Breeders' Association, which I understand is to include the breeders of all sorts of cattle. I am glad to see the by-laws and constitution of this Association provide that one director be chosen yearly by the officers of the Agricultural College. This will put the Association more in touch with the College and more in touch with the agricultural interests of the country, and I believe it will be beneficial to both. I have simply alluded to these matters to show that in the few years in which these associations have taken part in our annual show, it has grown yearly in interest, and it is destined still to grow. I hope that the suggestions made by the chairman, viz, that the people of this city, and the ladies especially, take an interest in the exhibition, will be acted upon. Before I take my seat I wish to allude to the fact that the old Agriculture and Arts Association of the Province of Ontario is about to go out of existence. In its day it did an enormous amount of good in the Province in fostering agriculture, and especially in encouraging live stock. The Provincial Exhibition, when it wandered about from one city to another, was an educator to the people ; the Industrial Exhibition at Toronto, and the different exhibitions that are held in the larger cities and smaller cities, and county shows have superseded the old exhibition. We now have a more perfect organization. We have besides, through the wisdom of the Ontario Government, Farmers' Institutes in successful operation. The series of meetings will soon commence all over the Province, and will continue for several weeks. Each is now doing a good work in its own locality, and will be more successful than ever under the energetic direction of Mr. Hodson. I may say to the credit of Dr. Mills, President of the Agricultural College, that he was the first to introduce institute work in Ontario, and it was only when he was unable to do the work that it fell into other hands. We also have a Travelling Dairy, and we have other means of information by which the agricultural community is able to keep abreast of the times, and above all, we have the Agricultural College, which is doing successful work. In a few years scores and scores of young men will be sent out all over the Province, whose education must tell upon the agricultural community. I think we can congratulate ourselves on the present state of agriculture in this Province. It is true times are hard and prices low, but it is hoped that bad times will soon pass away, and if anything will help towards that end it is the assistance given by the Government towards keeping up these associations and encouraging the work at the Agricultural College and various other institutions, and through the influence of all these I hope the cloud will pass over and we will see a brighter day for agriculture in this Province. I extend to you on behalf of the citizens of Guelph our best hospitality. Applause.

ADDRESS BY MR. A. PATTULLO.

Mr. Andrew Pattullo, President of the Dairymen's Association of Western Ontario, was the next speaker. He was well received by the large audience, and spoke as follows : In asking me to respond to the kind words from Mr. Innes, addressed to the various bodies represented here, I feel the management of this meeting have imposed upon me a heavy responsibility, and I should be glad had it been placed on older shoulders. I may say on behalf of the Association with which I am more particularly connected, and of the Associations represented here, that I am sure I express the feeling of all the members here when I say we reciprocate the kind words addressed to us so admirably by Mr. Innes.

There is an appropriateness in this Fat Stock Show being held in the city of Guelph, and in the various bodies representative of Canadian agriculture meeting in this city, and I must congratulate the people of Guelph and the farmers of the Guelph section upon the

enviable reputation which this city has in connection with agriculture, not only in this Province and throughout the whole Dominion, but throughout the world, I may say, because, it is a matter of notoriety, and you know that the city of Guelph is known in connection with Canadian agriculture, not only here but abroad. It is something for a city of this size, not one of the largest cities of the Province, to be known throughout the world, through the energy and enterprise and intelligence of the farmers of the district, to be "The Smithfield of Canada." I think this is an enviable position for your farmers to have won, and for the sagacious men in Guelph who co-operate with the farmers in making the city of Guelph the centre of that great trade.

Guelph has another special claim for distinction in having the Agricultural College located here. Of course it was not altogether your fault the College was put here, but I think it was eminently proper that it should have been placed here; it was your good fortune that it is so placed, and the influences that emanate from this district go throughout the whole of this broad Dominion. I learned since I came upon this platform that these facts are not the only claim to distinction that you, the good people of the city of Guelph, have in this connection. I learned for the first time that you make the best cheese in the world, or the best cheese in the Province of Ontario, right near the city of Guelph. We, up around the town of Woodstock, in glorious old Oxford, had the impression that we did that; but I stand corrected and I will revise my opinion in the cheese industry, because I recollect the fact that Mr. Innes is a journalist, and I know no newspaper ever tells anything except what is strictly correct,—(laughter)—and I accept Mr. Innes' statement that Guelph is the place where the best cheese is made, because if I do not accept that statement I might get into trouble the way I did at the Eastern Dairymen's Association, when I said we had the honor of having had the original cheese factory of the country, when I found there were original cheese factories without number, and that the only and original cheese factory was down in Eastern Ontario, and there was another one of the same sort in Quebec, and in various parts of the country. So that we in Oxford had to abandon our claim, and now I, in your presence, on behalf of the county of Oxford, abandon our claim to make the best cheese. (Applause.)

You will allow me before sitting down to say one or two words in reference to some remarks that have fallen from Mr. Dryden and Mr. Innes. Mr. Dryden has referred to the aims and objects of this Association in admirable terms. I agree with all he has said about the necessity of having fat stock shows. The gatherings of these Associations have done an enormous amount of good to the agricultural community in the past few years, and they are still likely to do more in the future; they should not be abandoned. There are a great many associations represented here to-night, but I do not know that the number is too large. They are not only object lessons and means of education, but they are associations of business men banded together; they are looking after the business interests of the various branches of agriculture, which they undertake to represent, and they are doing a vast amount of good. I think the educational value of these associations can scarcely be estimated. The one which I represent is giving every year a propaganda of education, holding meetings all over the Province. You know what the Farmers' Institutes are doing in the same way, and the Swine Breeders' Association are doing similar work, in perhaps a little different way, but they are carrying on faithful work in agricultural education, and it is thorough education of the right sort, the discussion and comparison of the sum total of years' experience. It is through practical education that sort that farmers can progress year by year. Allusions have been made to the fac that Canadian agriculture has not been so prosperous as in the past. That farmers have had special disadvantages to contend against is true, but we have the comfort that we are perhaps as well off, or better off in this country, than the farmers of most other countries. We have probably not suffered so much as the farmers of England, or our neighbors, the farmers of the United States, so that while we have had to contend against great difficulty, our condition has been very far from deplorable, and there is as great a future for the Canadian agriculturists as there have been great opportunities for farmers in the past. My own impression is that the future of Canadian agriculture depends largely upon the people. Watching the markets of the world, you have got to do the same as business

men have to do in the cities and towns. If you are going to prosper you must know what the markets of the world want, you cannot change the markets of the world any more than you can change the prices. When you find out what the great consumers of the world want, then you must provide them with it. To give you an illustration: We in the county of Oxford, where the dairy industry is the great industry, are very much interested in pork. The swine breeders know that they have not only to supply good pork, equal to Danish, but they have to provide pork with a good flavor, and they must supply it in the particular form in which it is wanted. Your hams and bacon have to look as the English people want them to look, as well as to taste in such a way as to suit their palates. The farmers must cater to the markets rather than hope to change them. You cannot change the price of anything, and when the prices are down you have got to set your hands and brains to work finding out how you can produce the products of the farm a little cheaper than in the past. We have been teaching the gospel of good cheese for many years to the farmers, or rather they have been teaching it to themselves, and they have learned a good deal about the cost of production. This year the price of cheese has gone down. The first obvious lesson we have got to learn through adversity. Adversity it is that makes us perfect in this world in a great many ways; probably if we did not suffer we would not be what we are, not only in business but in every phase of life. It is through adversity the farmers have to learn, and one of the great lessons they have to learn is to cheapen the cost of production. There is a vast amount to do yet, the farmers have not done as much as they might have in dairying; they are satisfied with old buildings, old cheese factories, and old appliances which were good enough thirty years ago, but are entirely insufficient to meet modern requirements. These buildings and appliances place them at a tremendous disadvantage with the new factories which have been established in Manitoba and the Maritime Provinces. What would now be the best thing for them to do is to get rid of these factories; it would be a blessing in disguise if many of these factories would burn down; it would be a distinct benefit because they could put in machinery by which they could produce better cheese at less cost. I am glad to see that the farmers are taking hold of the question of better roads throughout the country. It is a fact beyond the possibility of discussion that in the cheese industry throughout Canada, by simply making the roads better than they are, the cost of producing cheese could be reduced from one-half to one-quarter of a cent per pound.

In some districts practical dairymen tell me that the roads increase the cost of cheese two cents a pound. For instance, in the Chatham district and in some parts of that country, the roads make it absolutely impossible that the dairying industry can be carried on at all. What difference does it make to the farmer whether he gets ten cents a pound for his cheese and it costs him eight, or whether he gets nine cents and it costs him only seven to produce it? If the price of cheese goes down I say the lesson is this: Improve the roads over which you must haul your products, and reduce the cost of producing that cheese, and the same thing applies to every agricultural interest in the country. We should educate our young farmers. My impression is that in this country we have got enough education, if not too much. I am in favor of liberal, popular education. I know that a sort of craze set in about the middle of this century for universal education, and probably it has gone in some directions to an absurd length. I do not believe we are in danger of having too much education, but I do believe, in this country, there is a great deal of what I call miseducation. I refer to it especially in reference to the farmers, and I want to say to the farmers here that you ought to look more carefully than you have done in the past after the education of your boys. I believe many of the boys have been taken from the farms in this country and educated in directions which rather unfitted them for the duties of life, and fitted them for a calling at which they could find no possibility of success. Just now many doctors and lawyers all over the country are starving—perhaps some of you are glad to hear that this is the case. The professions are overcrowded and the shops are overcrowded; still we are taking our boys from the farm and giving them a literary education, and never thinking to interest them more in the duties of the farm. I have no objection to a literary education, but I say, don't be so anxious about your boys knowing classics. These are well enough in their way, although they sometimes lead boys and girls to spend their time in reading the latest

novels of the day and in wasting their resources. If our boys, the sons of the farmers in this country, find they have got the rudiments of a good elementary education, don't mind these things so much, but educate them with reference to the farm on which you should endeavor to keep them. Train them in everything relating to the farm; teach them the nature of the soil, how to increase the fertility of the soil, how to prevent deterioration of the soil. Teach them how to produce cattle at a profit. Teach them how to make good cheese, and not to make bad cheese. Teach them all about swine, and the prevention of disease among animals. Teach them how to grow fruit at a profit. If you haven't got farms at home for them, send them into Manitoba, or into Algoma, which Mr. Dryden is opening up, and where there are glorious opportunities for the boys of Ontario. I say, give your boys that sort of education. If it were not that Mr. Dryden is here, and he was a member of the government, I was going to say that we have had enough high schools—if not too many. (Applause.) If I had my way I would combine for a few months the Department of Agriculture with the Department of Education—and you know the old saying, about the man and his wife being one, and she the one—and I should want in this combination that the Minister of Agriculture be the one, and I would ask him to convert one half the high schools into elementary training schools of agriculture. Instead of teaching boys so many "ologies" I would teach them the rudiments of agriculture, so that they would go back to the farm trained and fitted for the farm, and then these elementary schools of agriculture would be so many great feeders of the great agricultural university situated by the city of Guelph. This is what I believe the farmers of this country want. I have perfect faith in this country and in the progress of this country, despite the facts that agriculture has been depressed, and that the farmers have not been doing so well as we would like to see them doing. This is a glorious country of unlimited resources. I have been in southern Europe for the last month or so, and in passing through these countries it has been in my mind scores and scores of times, what a happy people we ought to be in this glorious Canada of ours, compared with the people of those old lands. (Applause.) Every time I go away I come back loving this country more than I ever did before, and having more perfect faith in its people and future. There are some lessons we learn abroad. I was in one great city in Italy where there are twenty-five thousand people living upon the streets; performing all the functions of life upon the street, having no more home than the wild beasts. We see from the train windows people plowing with a horse and ox together, and with a plow which might have been used by Romulus, or one similar to which Abraham might have used upon the plains of the Orient. We have many things to be grateful for in this country. One of them is this: We live not only in a land of plenty, but in a land of peace. In Europe they are ground down by the dreadful military systems, and the people are in half pauperism keeping up the standing armies which the nations will throw at each other some day. I say to the young men when you are at these meetings, and hear the condition of agriculture discussed in somewhat doleful terms, do not be discouraged, do not leave the country. In agriculture, as in business, there are opportunities for those who understand their business, and there are good prospects for Canada and for every young Canadian who is willing to work and is intelligent and industrious, and who has faith in the future of this great country of ours. Applause.

OUR EXPORTS OF LIVE STOCK.

Prof. James Robertson, Dominion Agricultural and Dairy Commissioner, was then called upon and delivered the following address on the requirements of the British market, with special reference to our exports of cattle, sheep, and swine, and productions thereof: I came as a very recruit some ten years ago to Guelph, and if the people have retained their kindliness here towards strangers and have improved on it since then, I can throw myself on their indulgence with some confidence. Having heard from those in excellent positions to speak with authority of all the good things you have in this

Province of Ontario and which I rejoice in sharing, I speak with a good deal of diffidence before all the members of these organizations who are doing so much for the people of this Province. It is very nice, the people of Ontario think, for me to go down to the benighted Prince Edward Island, and the darkened understandings of Nova Scotia, and the far away people of Quebec, and talk to them with some measure of confidence and self-possession, but to come before the very elite of Ontario gathered at Guelph is a different task, and so I feel some diffidence. I estimate very highly all these educational means which have been referred to, such as the Exhibition and the associations behind it, because of all the good things in this beautiful Province—and there are many of them—I do not know anything which cannot be made a great deal better than it is by the intelligence and skill, and industry, and patience of the men and women of this Province. Even your fertile soil and wonderful grasses which cannot be praised too highly, you may make still more of by the application of skill, intelligence, and patience; and if you go through the whole list, taking the grasses, the fodders, the grains, the roots, the fruits, the trees, the flowers, the sheep, the horses, the cattle, the boys and girls, and the men and women—I may say the last with a great deal of reverence—from the soil to the women, they might be improved.

The British people, as represented through British markets for food, are great eaters, and the producers in nearly all civilized countries in the world are struggling for the privilege and profit, if any can be found, of purveying to their tables. The United States, France, Germany, Denmark, Italy, Holland and all the rest of them are engaged in a peaceful but commercially merciless warfare for the preference of her buyers. Canada, Australia and the other colonies have been shown no favors. In many respects the strong arm of Britain is partial in a motherly way to her colonists, but in the matter of her essential supplies of food she buys from whoever offers the best quality at the lowest price. From that come keen competitions between the producers of different nations for the first place in her markets, and between different kinds and qualities of food for the highest prices there. To win in these competitions, which by the building of great railways and the providing of more commodious and faster lines of steamships become keener every year, it is necessary that the foods should be wholesome, nice in taste, nice in appearance and particularly nourishing. They must also be foods of reputed respectability as to origin and name, according to the English notions of these. Many a British family rather than offer to their guests a roast under the name of "Chicago" or "Australian" beef will pay the retail butcher at the rate of six cents per pound to lie in a suave and unconscionable way for them by calling it "best Scotch" or "best English." The imports of fine food products to Great Britain in 1894 are shown in the following table:

British Imports, 1894.

	Value.
Animals living (for food)	$44,237,455
Dressed meats	110,594,951
Butter	65,489,268
Margarine	14,818,075
Cheese	26,644,708
Lard	13,424,292
Milk (condensed and preserved)	5,252,277
	$280,461,026

The consumption of meats in Great Britain is now about 125 pounds per head of the population, and of that quantity thirty-eight pounds per head are imported. The consumption of butter is about fifteen pounds per head of the population, and of that about nine and one-half pounds are imported. The consumption of cheese is about thirteen and one-half pounds per head of the population, and of that five and one-half pounds are imported.

A chart was here exhibited, showing the comparative nutritive values of twenty-five cents' worth each of different foods. From it it appeared that one pound of cheese contained as much nutritive material as two and a quarter pounds of beef. The greater number of wage-earners in Great Britain buy foods which are concentrated, fine and of dainty flavor, even when they cost more than commoner or coarse foods could be obtained for. The foods of animal origin which are exported from Canada are particularly wholesome, palatable, nutritious and cheap The policy of Canada in this regard should be to beguile the British consumers into depending upon us for their supply. That can only be done by sending the very best and finest quality continuously. The following table shows the total numbers of animals which are available for food and whence the supply might be obtained :

THE WORLD'S LIVE STOCK.

——	Cattle.	Sheep.	Swine.
In the world	298,873,657	534,848,924	102,172,224
United Kingdom	11,207,554	31,774,824	3,278,030
Canada	4,060,662	2,513,977	1,702,785
Australasia	12,632,018	116,153,632	1,026,014
United States	52,378,283	42,273,553	46,094,807

It will be noticed that the total value of the cheese and butter imported by Great Britain is considerably less than the amount paid out for dressed meats. Great Britain obtains her supplies of dairy products from the countries shown hereafter :

——	Butter.	Cheese.
Total value	$65,489,268	$26,644,708
	cwts.	cwts.
Total quantity	2,327,474	2,266,145
From—		
Canada	20,887	1,142,104
United States	29,996	672,347
Denmark	1,102,493	.....
Australasia	292,097	54,375
France	424,645	52,969
Sweden	266,806	.....
Holland	165,157	298,693
Germany	137,755	.....
Other countries	135,999	45,657

CANADA CONTROLS CHEESE.

Canada is well up in supplying cheese to Great Britain. She now furnishes over fifty per cent. of the total quantity imported there. That has been brought about mainly by the excellent quality and by the means which have been taken to get Canadian cheese and its quality recognized under its own name all the way through to the consumers. The Canadian trade in butter is a growing one, and the shipments of fresh-made creamery butter in cold storage compartments during the current year have given it a better name than it had been able to attain hitherto. A very large trade in that product is coming in the near future.

Great Britain draws her enormous supplies of cattle and beef mainly from the United States and Canada, as the following table shows :

British Meat Imports, 1894.

——	Cattle.	Fresh beef.	Salted beef.	Preserved beef.	Meat, unenumerated.
Total	No. 475,440	cwt. 2,104,104	cwt. 242,311	cwt. 290,822	cwt. 189,757
From—					
Canada	82,332	.....	2,729	3,672	671
United States	381,931	1,775,538	235,120	205,485	34,315
Australasia	.....	304,513	3,375	70,602	10,569
Other countries	11,186	24,053	1,087	11,067	144,202

Competition has begun with shipments of live cattle from Australia, and a cargo was sent from there by the Southern Cross in September of the current year. It does not seem as though the competition from that quarter need be feared very much. The freight charges alone amounted to about $39 per head, and the total cost for ocean transportation, including insurance, fodder, etc., amounted to about $68 per head. The freight only on sheep by the same steamer was $2.50 per head, and the expenses for freight, insurance, fodder, etc., amounted to $6 per head.

The Argentine Republic sent during the first eight months of 1893 5,643 head of cattle to Great Britain. During the same period of 1894 she sent 7,831, and during the same period of 1895 the shipments from there to England were 25,161. However, the quality of the animals from South America is much inferior to those which go from Canadian and United States ports. They sell from $1 to $2.50 per hundred pounds lower.

The carcasses from United States cattle sell for about twenty-five cents per hundred pounds higher than those from Canadian cattle. In the great London cattle market the average price for six months ending August 31st, 1895, was about $8 per hundred pounds by live weight ; at Liverpool the average price during the same period for cattle on foot was $7 43 per hundred pounds. At the same time the hind-quarters of beef which were forwarded in refrigerator chambers were sold for from $10.50 to $13.50 per hundred pounds. The price for the whole carcasses from Deptford and Birkenhead were from $9 to $11.50 per hundred pounds. The maximum price for the chilled or refrigerated beef was considerably above the top prices obtainable for beef from the United States or Canadian cattle killed at the abattoirs at Deptford or Birkenhead. The quality and price of "chilled beef" are not to be confounded with or mistaken for frozen beef.

Australian Frozen Meat.

Hind-quarters of frozen beef from Australia were selling for $6.50 to $7 per hundred pounds at the same time. The frozen beef when thawed out becomes unsightly in appearance, and that acquired attribute stays on it and with it even after it is cooked. In the London market the difference between the prices paid for Scotch and English sides of beef and those sold under the name of Canadian or United States is still considerable.

Scotch sides are quoted at $11 25 to $14.62 per hundred pounds ; English sides are quoted from $11.25 to $12.87½ ; at the same time United States and Canadian sides are sold for from $9 to $11.50 per hundred pounds. These are the prices at the wholesale markets. The difference in price entirely disappears before the cuts from these sides reach the consuming purchaser. There is no discernible or perceptible difference in the real quality, but there is a very decided and appreciable difference in the profits which stay in the tills of the wholesale dealers or the retail butchers. It is highly desirable that Canadian farmers and shippers should get their own legitimate share of that great profit.

British Sheep Imports.

The following table shows the number of sheep and lambs and the quantity of their products imported into Great Britain in 1894 :

——	Sheep and lambs.	Mutton, fresh.	Mutton, preserved.	Other sorts.
Total	No. 484,597	cwt. 2,295,066	cwt. 112,928	cwt. 150,382
From—				
Canada	135,622	.....	1,258	2,320
United States	198,138	23,121	3,626	68,394
Denmark	65,436	.....	.....	.....
Argentine Republic	73,446	585,729	.....	.....
Australasia	.....	1,439,502	106,619	43,965
Other countries	11,953	246,714	1,425	35,703

There has been a great increase in the number of sheep and lambs shipped from Canada during the current year ; and now our sheep and lambs are threatened with the embarrassing scheduling regulations, which have done so much harm to our cattle trade.

Swine and Other Products.

The imports of swine products are enormous and are continually increasing. The following table shows the quantities imported in 1894 :

——	Pork, fresh.	Pork, salted.	Bacon.	Hams.
Total	cwt. 180,383	cwt. 225,010	cwt. 3,689,604	cwt. 1,129,704
From—				
Canada	.....	7,702	254,443	50,576
United States	4,339	140,286	2,561,203	1,075,270
Denmark	2,015	61,460	706,828	1,785
Holland	133,526	1,935	23,666	.....
Sweden	.....	1,791	72,541	.....
Other countries	40,503	2,045	10,923	2,153

During the last two years there has been a great increase in the home production of pork in Great Britain. To the end of the year, ending 30th June, 1895, it is reported that the number of breeding sows is sixty-four per cent. greater than during the previous year. The pork packers in Wiltshire are reported to have been paying in September of the current year nine and a half cents per pound live weight for pigs weighing not more than 150 pounds and having not more than two and one-half inches of fat on their backs. To obtain a larger share of this trade it is necessary that the swine and their products from Canada should be specially produced and specially prepared to meet the taste and demand of the consumers in Great Britain. They decidedly prefer bacon which is lean, thin and mildly cured. With the cold storage facilities there is a reasonable probability of developing a large and profitable trade with Great Britain in fresh pork as well as other meat products.

Having thus demonstrated the enormous possibilities of the British market, Professor Robertson announced that the following proposals are now under the favorable consideration of the Dominion Minister of Agriculture :

Exports of Dressed Meats.

The prosperity of the farmers of Canada is dependent in a great degree upon the measure of success and profit with which they rear, feed and market animals and their products. The live stock interests of the country are inseparably interwoven into the systems and methods of agriculture which are general in every part of Canada, with the exception of limited areas in Manitoba and the Northwest Territories. To maintain the fertility of the land, to ensure the growth and rotation of a variety of crops, as well as to obtain a profitable revenue from the capital invested and the labor employed, it is necessary that farmers in Canada should rear and feed increasingly larger numbers of cattle, swine, sheep and poultry. By the growth of Indian corn, fodder and other forage crops, the farmers are now able to feed twice or three times as many head of animals as they could provide feed for from their farms a few years ago.

To give stability to the profits from farms, and thus to ensure prosperity to the whole country, it is necessary that all perishable food products from Canadian farms should secure as good a place relatively in the British markets as has been won by Canadian cheese and creamery butter. Judicious and energetic action by the government can accomplish as much for beef, mutton, pork, poultry and other products as has been done for cheese and butter. It is most urgent and desirable that something should be done, particularly for beef, mutton and poultry.

There has been a decided falling off in the number of cattle exported from Ontario and Quebec since 1890. The following table shows the number shipped from Canada to Great Britain :

Year.	Cattle.	Sheep.
1890	122,182	43,780
1891	118,947	32,157
1892	98,755	15,932
1893*	80,899	1,780
1894	82,217	121,304
1895	96,546	215,508

* For ten months only.

The figures from 1890 to 1894 inclusive, are for the years ending June 30, and the figures for 1895 are taken from those published in *The Montreal Gazette*, compiled from the returns of the shipments during the period of navigation at Montreal. Of the 96,546 cattle shipped in 1895, it is reported that over 40,000 came from Manitoba and the Northwest Territories.

The shipments of cattle from Ontario and Quebec were checked in 1892, doubtless by the regulations of the British Board of Agriculture, whereby our cattle are required to be slaughtered at the port where they are landed. That leaves no alternative market, and the restriction is used to beat down prices unmercifully to shippers, and through them back on the Canadian farmers. In so far as the restrictions prevented the shipments of store or lean cattle from Canada, it was not an unmixed evil, except to the Scotch and English farmers who purchased and fed them. They have been agitating for the repeal of the restrictions ever since, but what are they among so many who are resolutely opposed to any relaxation of the regulations? Even if the repeal of the unwarranted action scheduling Canadian cattle would give relief and safety to the business, it is evident that it is not to be expected from that quarter.

I am of opinion that relief should be sought, and I am confident that it can be gained, by the opening up of a trade by which the cattle may be slaughtered in Canada and the dressed beef supplied direct to the consuming purchasers in Great Britain. There are many difficulties in the way, which I think no private individual or joint stock company

can overcome. The business is one which is urgently and essentially important to the welfare of Canadian farmers, and because the government can overcome the difficulties successfully, without the expenditure of a large, if any, sum of money, it seems befitting that the government should take it up.

Marketing Difficulties.

(1) When our cattle are shipped alive by rail and afterwards by steamship, they arrive in Great Britain in a jaded condition. They look at their worst, and are about their worst for killing for beef. Both of these conditions enable the British buyers to beat the prices down. Formerly, when the cattle could be rested and fed on grass or succulent fodders on British farms for even a few weeks, they gained tremendously in weight and recovered in quality quickly. That alternative avenue for marketing the cattle caused a relatively higher price to be obtainable and also gave a steadiness to the prices and the demand which are now wanting.

(2) The Canadian shippers, with the cattle at the port where they have been landed, have no alternative but to sell at once, or within two weeks, at whatever prices they can get. If they hold for even a fortnight the cost of feeding becomes a large item of expense, and the arrival of fresh shipments by the next steamers gives the buyers an additional argument, which they use most effectively in further depressing the market and lowering the prices.

(3) The beef from Canadian cattle when shipped and handled in that way, does not reach the consumers in a condition which permits it to secure a good reputation for the excellence of quality which it would have if the consumers were able to purchase the beef at its best from such cattle as are fed in Canada.

(4) As a matter of fact, a considerable quantity of the beef from Canadian-fed cattle does not reach the British consumer under the name of "Canadian-beef." The misrepresentation which finds a place in that practice works directly and continuously to the injury of Canadian interests. It prevents us from establishing the trading connection between the consumers and our producers for Canadian products under their own name, which alone can ensure a satisfactory continuity to the demand.

(5) The cattle buyers and retail butchers in Great Britain get more than their proper share of the ultimate price paid by the consumers for the beef from Canadian cattle. The profits which they exact, as between the consumers and producers, and which mainly come out of the pockets of Canadian farmers, are little short of extortion. Their voice and influence have been joined to that of scarcely veiled hostility of the landed interests of Great Britain against the withdrawal of the regulations scheduling Canadian cattle.

(6) These two powerful interests, although united from entirely different motives, may readily bring about such a condition of affairs as to bring almost irretrievable disaster upon our live stock interests. That would be calamitous to our farmers for many years to come. An alternative means of reaching the British consumer with Canadian beef is the only way whereby a safe and elastic outlet can be provided for the increasingly large numbers of cattle which are being reared and fattened in Canada.

(7) At the present time there is no opening for the exportation of small-sized cattle, such as are most commonly grown and fattened in the Province of Quebec. In one of our feeding tests on the Central Experimental Farm, it was found that the cost of feed consumed per 100 pounds of increase in live weight was least in the case of a calf steer of the "French-Canadian" or Quebec Jersey breed. The beef from such cattle is of excellent quality, but their small size has debarred them from being exported, as the freight charges are reckoned per head, and a small animal occupies the space in a steamship which would otherwise be filled by one of heavier weight.

Prejudice to be Overcome.

(8) Dressed beef has not been shipped from Canada hitherto, because cold storage service in warehouse in Montreal and on board ocean steamships was not provided of an adequate sort for any of our perishable food products until it was taken up by the

government during the current year. Even a greater measure of success than has attended the cold storage service for the putting of Canadian creamery butter on the British markets can attend the shipments of dressed beef and other meat products to Great Britain. That this matter cannot be inaugurated by private enterprise is evident from the tremendous disabilities from which the great United States packers and shippers, backed by millions of dollars, have not been able to escape. The question of sentiment on the part of British consumers is a most powerful and far reaching factor in determining the way they buy and the prices they pay for the articles of food which they consume. The name "frozen beef" and the stories set agog about the abominations of slaughtering houses, diseased animals, etc., are powerful to keep the best class of customers from buying or from letting it be known they do buy anything but the best English and Scotch beef. If beef as good and as cheap as the best English and Scotch beef could be obtained from shops or depots in Great Britain under the name and supervision of the Canadian government for one year as an object lesson and introduction of the business, the best class of buyers and consumers in each of the large cities could be attracted to give preference to Canadian products. The beef could be sold at prices much lower than the current prices for a similar quality of English and Scotch beef, and an ever growing demand for our beef could be created at such prices as would leave it possible for Canadian farmers to obtain higher relative prices than they have been getting during the past few years.

The Plan Recommended.

(1) The prime object should be to put Canadian beef and other meats within reach of the British consumers in their best condition, under their own name and in such a way as to attract the best class of purchasers to be our permanent customers. In shipments of beef and other meats from Canada it is necessary that they should be chilled only. The distance and the time required for shipment are not more than sufficient to permit the beef and other meats to be properly cured when they reach the stores and depots in Great Britain. The meats might be designated "chilled Canadian beef," "chilled Canadian mutton" and "chilled Canadian poultry." When the quality and reputation of Canadian meats under their own name are recognized and established we could continue in competition with the producers and sellers of meats from all other countries upon an equal footing, and with a fair chance of securing the best customers, particularly if we could offer better value in better meats at even the same prices per pound.

(2) To permit this to be done, and as an object lesson to the producers and shippers of animals and meats from Canada, I recommend that provision be made for the purchase of about 500 head of cattle per week during the shipping season at the port of Montreal, and that the dressed beef from such cattle be sent as "chilled Canadian beef" to Great Britain and distributed through retail depots in Bristol, Birmingham, Manchester, Liverpool and London in such a way as to secure recognition of its good qualities; other cities, such as Glasgow, Dundee and Edinburgh, might be included.

(3) Arrangements could be made for the slaughtering of the cattle at abattoirs in Montreal. The beef could be covered by distinctively Canadian wrappers of attractive appearance; it should be chilled in cold storage chambers; it should be carried in cold storage compartments on board the ocean steamships; it should be taken into cold storage chambers at the port of landing, and from there distributed to and through the depots in the cities mentioned.

(4) The distribution through retail shops or depots in Great Britain could be effected, notwithstanding the competition of retail butchers. The prices at which the different cuts should be sold to the consumers should be fixed by the commissioner in charge of this work, on behalf of the Canadian Government. These should be advertised widely and effectively in the several cities. Canadian meats only should be sold in these depots.

(5) It should not be made compulsory to purchase 500 or any other number of cattle every week. The number to be purchased and killed should be left to be regulated from time to time by the activity of the demand and the success of the distribution in Great Britain.

(6) The administration of the whole matter should be taken up by the Government. The actual net cost to the Government for the management of the whole business would depend upon the prices which may prevail in Canada for cattle during next season. If the price in Canada be relatively low compared with former years—which would be most unfortunate—then I am confident that the whole plan and business could be managed without any cost, loss or charge to the Government, and would show a profit; but in case the price of Canadian cattle in Canada should be relatively higher than in former years—which would be a good thing for the country—then, I estimate that a sum of $30,000 might be required to meet the extraordinary and unusual expenses, which are inseparable from the inauguration of the business, at the abattoirs, on board the steamships, at the depot at the port of landing, and at the depots or shops for the distribution of the beef and other meats in Great Britain.

A Government Object Lesson.

(7) By the Government taking full charge of this business as an object lesson to open up a channel for a valuable trade it would obtain the hearty support of the farmers of Canada, of the shippers of cattle from Canada, and of the railway and steamship companies. The 500 head of cattle (more or less) taken per week would not be more than about one eighth or one-tenth of the total number passing through the port of Montreal.

(8) The Government control of this business would win for it a status and name in Great Britain at once, which no private individual or joint stock company could ever secure. The prestige of powerful Government administration, the reputation of the Government in having successfully assisted in putting Canadian cheese and Canadian butter on the British markets in the best way, would vanquish the active hostility of the retail butchers, without any keen commercial struggle involving loss. The Government would be in a position to select the pick of the cattle at Montreal, and it would effectually prevent any such sentiment being foisted upon the consumers in Great Britain towards the dressed beef trade from Canada, as would make them think of it as a "cheap John" affair for the disposal only of the beef from the refuse cattle of the country, which were not fat enough, fine enough or large enough to be shipped alive.

(9) It need not be managed by the Government for longer than one year, for doubtless a joint stock company or other commercial concern could be formed to carry it on thereafter.

In illustration of the course to be pursued Prof. Robertson gave a brief sketch of the development under Government support of the creameries and cheese factories of Prince Edward Island. In closing he said:

If the business of shipping dressed meats be begun at once it would give safety to the outlook for the whole of the live stock interests of Canada and prevent a panicky disaster, which might come at any time if our cattle were to be wholly excluded from being landed alive in Great Britain. An export demand for Canadian dressed beef might also be created, which would last during the whole year.

Immediately after the close of navigation at the port of Montreal exports of cattle from Canada practically cease. That results in great lowering of the prices of fat cattle until the opening of navigation during the following season. During the present month it is reported that quarters of beef are being sold in Toronto and other markets as low as two cents per pound.

In former years it has led to the shipment of surplus beef from the western Provinces into the Maritime Provinces. This has prevented the farmers in those localities from selling their fattened cattle to advantage. A profitable demand, such as would be created by the inauguration of a dressed beef trade from Canada, and continuing during every month of the year, would take all surplus fattened cattle in the western Provinces and Quebec for Great Britain, and leave the markets of the Maritime Provinces bare and available to the farmers adjacent to them.

Thus the opening up of an export trade to Great Britain in dressed beef would be an undoubted, immediate and lasting benefit to the farmers in all the Provinces of Canada lying between the Rocky Mountains and the Atlantic coast.

APPENDIX B.

TWELFTH ONTARIO PROVINCIAL FAT STOCK AND DAIRY SHOW.

The Provincial Fat Stock Show held at Guelph, December 10th to 12th, 1895, was a decided success in all its departments, and was generally conceded to have been the best of the kind ever held in Canada. This is certainly true of the show of sheep, and probably of swine as well.

Cattle.

Of the cattle, it may safely be said that, taking it on the whole, it was quite equal to the best of the series. There may have been at former shows some better animals than the best of this year, but the general average was a distinct advance on that of former years. Shorthorns and their grades were, as usual, largely in the majority, but it was gratifying to find this year an increased number of representatives of the other beef breeds. Mr. H. D. Smith, Compton, Que., and the executors of the late F. W. Stone, Guelph, made a very creditable show of Herefords and their grades; D. McCrae, Guelph, sent a choice selection of Galloways; J. Bowman, Guelph, exhibited some very fine Polled Angus, and W. J. Rudd, Eden Mills, showed a smooth lot of Devons. There were eighty-two entries of cattle, an increase over the number shown in former years. There was a marked degree of uniformity in the type of beef animals shown. The old and overgrown specimens seen in former years were not here, thanks to the wisdom of the directors in limiting the competition to steers under three years old. Breeders and feeders have learned the lesson that there is no profit in feeding older animals, and that the market calls for bullocks of medium size matured at an early age.

Shorthorns. The class for registered Shorthorns was well filled with smooth and well fitted steers. In the section for two year old steers, Mr. Oke had a good first in the red Iron Clad, a profitable butcher's beast with strong well covered back and loins, firm in flesh, and one that would kill with light offal. Mr. Bolton had the first prize yearling steer, a white "Snowball," one of the plums of the show, a model steer, well furnished in all his parts, showing fine breed, character and feeding qualities. He will, no doubt, be a strong candidate for the championship next year if spared. He was awarded the Sweepstakes as best registered Shorthorn steer. For the best steer under one year, Mr. Oke won first place with an extraordinary calf. Ages counted to first of December, and he was said to be a year old at that date, but looked to be several months over the mark. He is very deep and broad, with straight lines and well covered back and ribs. He, too, should make a strong card for the show of 1896.

Grades. This was a very strong class. Mr. Oke was to the fore in the section for two year old steers, with a capital roan, young for his class, but ripe for the butcher; blocky, smooth, firm, well covered on back and ribs, and with fine handling qualities he was a clear first in his class and won the Sweepstakes as best grade Shorthorn steer. One of the best things in the show was the first prize yearling steer, shown by W. H. Nichols, Hamilton. He was the first prize calf of 1894, and has developed wonderfully, being large, yet well furnished and finished. He showed fine breeding and had fine feeding qualities. Mr. Oke had the winner in steers under one year, a very level, smooth fellow with long quarters, strong loin and well covered back. Mr. Rennie's steer was a close second and has much the same style and quality, and they will be close competitors another year if both go on as well as they are likely to do. The show of grade heifers was unusually good. It was one of the strongest features of the show. Mr. Oke had first prize winners in the three year old and in the two year old rings. The latter was a remarkably fine heifer with great back and loins and firm flesh.

The champion of the show was found in the first prize Grade Shorthorn heifer, 1 and under 2 years, shown by James Rennie, Wick. She had no walk over, for the first prize animals in all the other classes were competitors, and they were strong in every class. Mr. Oke's 2 year old Shorthorn and his 2 year old Grade steers were in it, as well as Mr. Bolton's first prize sweepstakes Shorthorn, Mr. Oke's first prize Grade 2 year old, and Mr. Nichol's first prize yearling Grade steer, but the four judges who had pronounced upon the classes in pairs, all joined to award the championship, and after careful examination and consultation gave the highest honors to the heifer "Susie," just two years old, though she showed as under two by the rules of the show. She was a very sweet heifer, wonderfully developed for her age, with a grandly covered back and loin, straight top and bottom lines, long level quarters and full flank and thighs. Her weight was 1,415 pounds, and she was done up in compact space, ripe and finished; she was indeed a remarkable example of early maturity.

SHEEP AT THE WINTER SHOW.

The show of sheep at the winter show held at Guelph, December 10th to 12th, 1895, was a great success, and augurs well for the future of that very important industry. The latter part of the year has witnessed a very distinct revival in the demand for sheep, and especially for pure-bred rams, for use in the large flocks on the ranches of the Western States and Territories. The prospects for this trade next year are very bright, and flock owners are taking a very cheerful view of the future. The total number of entries, including all classes, was about 250, and the number of exhibitors about 25. Nearly all the breeds were represented, the only exceptions being those of the Cotswolds, Oxfords and Dorsets. Their absence is accounted for partly by the fact that prizes are not offered for each breed separately, and partly from the fact that most of the show sheep in these classes were sold early in the fall to be shown at the leading State fairs in the United States, where they were successful in winning a large share of the best prizes. Canadian Cotswolds in the hands of American exhibitors were especially successful in the circuit of the western fairs, and at the "round up" at the great show in Madison Square Gardens, New York City, they won nearly everything in sight in their class. Oxfords and Dorsets also made a strong show at the fall fairs, both in Canada and the States. It is a question the Sheep Breeders' Association might well consider, if the funds are at all available, whether it would not be an improvement to offer prizes for all the breeds separately. It would increase the number of entries and add to the interest of the show to visitors, while it would enlist more of the breeders in the success of the show. If it were necessary in order to raise the amount of money required, the sweepstakes prizes might be omitted for a time, and especially those open to all breeds, which frequently lead to dissatisfaction and fail to settle anything, since judges generally lean towards the breed of their choice or in which they are interested.

Long Wools. In the class for long wools at Guelph, Lincolns were shown by Gibson and Walker, Denfield; Wm. Oliver, Avonbank; T. E. Robson, Ilderton; and Leicesters by John Kelly, Shakespeare and W. E. Wright, Glanworth, who had one entry. The judges were A. W. Smith, Maple Lodge, and Wm. Thompson, Uxbridge, with R. W. Stevens, Lambeth, as referee. The judges were careful and capable, and gave good satisfaction. The competition was keen and close in every section, with hardly an inferior entry.

In the section for ewes, one year and under two, Gibson & Walker scored first, with a very superior Lincoln, with grand back and loin, a feature which characterized the entire exhibit of these gentlemen, which was one of the largest in the show. Mr. Kelly's ewe, which was placed second, was a typical Border Leicester, with the stylish carriage, heavy brisket and full leg of mutton which characterized his exhibit throughout. The only weakness in this entry, and one which was noticeable in most of his entries, was a bit of bareness on the back at the coupling of the loin, but for spring of ribs, prominence of brisket and fulness of twist and thigh, Mr. Kelly's sheep were unequalled, and they

are large and full of constitutional vigor. Captain Robson had an excellent ewe in this section which was assigned third place, and well deserved it in the strong competition she met.

In ewes under one year there were twelve entries, and a very strong exhibit it was. Gibson & Walker were again placed first and Mr. Kelly second, with animals holding about the same relative positions as to quality as in the former section. Mr. Oliver had a good third in his Lincoln, Mamie, a lamb full of quality and substance. One of the strongest features in the show was the Lincoln yearling wether shown by Gibson & Walker. He was a winning card from start to finish. He is built that way and would be hard to beat in any country. He combines size and quality in a very high degree, and has not a weakness in his whole make-up. He was not only first in his class, but also winner of the grand sweepstakes prize for best pure-bred wether, of any breed, and of the Cooper prize for best sheep in the show, bred by the exhibitor. Mr. Kelly won first prize in the section for wethers under one year, with a model lamb, large, shapely and full of natural flesh, broad, deep and full in all points. For three ewes under one year, Gibson & Walker won first, with a well-matched trio, Mr. Kelly coming in a good second The call for fine sheep under two years, bred by exhibitor, brought out two splendid lots, shown by Gibson & Walker and John Kelly, the prizes going in the order named.

Medium Wools In the class open to Oxfords, Hampshires and Shropshires, only Shropshires were shown, and they made a very creditable show indeed. The principal exhibitors were John Campbell, Woodville; D. G. Hanmer & Son, Mount Vernon; R Gibson, Delaware; W. E. Wright, Glanworth; W. H. Beattie, Wilton Grove; J. P. Phin, Hespeler; John Rutherford, Roseville. The judges were H. Arkell, Teeswater; A. McFarland, Clinton, with John Miller, Markham, as referee.

Yearling ewes were a very superior class, and it taxed the skill of the judges to place the winners satisfactorily. They found the first prize winner in Mr. Hanmer's "240," a ewe showing fine breed character, a grand set of legs and extra good covering. Mr. Campbell's "540," a very even, compact ewe of fine quality, made a good second, and Mr. Hanmer's "242," an exceedingly plump and pretty ewe, a little on the short order, but a splendid handler, got third place. Mr. Phin had a very handsome ewe, which was the reserve number and highly commended. Ewe lambs were shown by Campbell, Hanmer and Phin, and were a very strong lot. The first place was given to Mr. Campbell's "609," a lengthy, level lamb, a little wanting in depth and in covering of legs, but with fine fleece. Some good judges would have placed Hanmer's thick, blocky well-covered lamb at the head of the list, but the judges gave her second place, with another of Mr. Hanmer's of similar style third. Mr. Phin was again highly commended for his entry.

In the section for wethers, one year and under two, Mr. W. E. Wright had a clear first in a good class with his "106," which was the first prize wether lamb at the show of '94. He has grown out well and is very perfect in all his parts, a model mutton sheep well brought out. Mr. Campbell's Bouncer, a thick, finely formed sheep, with good handling qualities and fine fleece, made a worthy second, and the same exhibitor got third place for a very good one. Richard Gibson had the first prize wether under a year, an extra good one, of good size and full of flesh and quality, standing splendidly on his strong, straight legs, and every inch a winner. W. H. Beattie came in for second, with a very good one, and W. E. Wright got third place with a very creditable entry. For three ewes under one year, D. G. Hanmer got first, J. P. Phin second and John Campbell third. All were good lots. For three wethers under one year R. Gibson had a strong trio and headed the list, followed by W. E. Wright second, and W. H Beattie third. For the best five sheep under two years, bred by exhibitor, D. G. Hanmer won first and John Campbell second. These were very even lots, and were fine representatives of the breed.

Southdowns were classed with Dorsets and Merinos, but had the field to themselves. The exhibitors were John Jackson & Sons, Abingdon; T. C. Douglas, Galt; A. Simenton, Black Heath; Geo. Baker & Sons, Simcoe; W. H. Beattie, Wilton Grove; A Telfer & Sons, Paris The quality of the sheep was good, and the competition keen throughout. The judges were H. Arkell and John Miller, with Mr. McFarlane as referee. Ewes one

year and under two were a superb lot, and Mr. Simenton's "Martin's Ewe, 24," was by common consent placed at the head of the list. She is a typical South Down, showing fine breeding, and her level back, full brisket and plump leg of mutton would be hard to beat in any show. Mr. Douglas had a very worthy second in his "55," which also made a record for herself in the sweepstakes competition for best ewe, bred by exhibitor. Mr. Simenton was again first in a good ring of ewe lambs and Mr. Douglas second. For wethers, one year and under two, Jackson & Son had a winner in their "Woodside, 9," a very finely finished sheep, with strong breed character and good handling quality. Mr. Douglas had the second prize winner in "Penfold," and Telfer & Sons won third. For wethers under one year, Simenton won first, with a very excellent lamb, showing size and quality nicely combined. Jackson had a good second and Douglas came in for third. There were nine good ewe lambs in the section for trios, and Mr. Simenton secured first prize, Mr. Douglas second and Jackson & Sons third. For the best three wethers under one year, Mr. Douglas got to the top, with Jackson & Sons second and Baker & Sons third. For the best five sheep, bred by exhibitor, Mr. Douglas was first and Jackson & Sons second

Grand Sweepstakes, for pure-bred wethers under two years, brought out the first prize winners in all the classes. The two sets of judges united and Gibson & Walker's yearling Lincoln wether was declared the victor. For the best pure-bred ewe, any breed, under two years, Gibson & Walker brought out two yearling ewes and one ewe lamb, Hanmer two yearling ewes, Campbell one ewe lamb and Douglas one yearling ewe. This was a close contest and seemed to narrow itself at last to a match between Douglas' second prize yearling ewe and Hanmer's third prize yearling ewe. The Southdown was finally awarded the coveted honor, though many good judges failed to see in what respect she was superior to the Shropshire. Indeed this decision was more strongly criticized than any other during the show.

Grades and Crosses. The grade class was an exceedingly interesting one, and was well filled with splendid specimens of mutton sheep well fitted for show or the block. The exhibitors were John Jackson & Son, T. C. Douglas, John Campbell, A. Armstrong, Geo. Bickell, Freelton; John Rutherford, T. E. Robson, R. Gibson, John Kelly, Jas. Leask, Greenbank; Thos. Wood, Kilbride; W. E Wright, Gibson & Walker, Jas. Bowman, Douglas Lillico, Ayr; D. G. Hanmer & Son. The judges for Longwools placed the awards in this class. The strongest card in the contest was Wm. Rutherford's grade Shropshire Leicester two years old wether Dick, which won first in his class, and the sweepstakes as best grade wether, any age. He was a rarely good sheep from a butcher's standpoint, full of firm flesh and standing on strong, straight legs. Mr Campbell's first prize yearling wether, a Shropshire-Leicester cross, was another uncommonly good one, as was also his Shropshire-Oxford wether which won second place. Jas Leask showed a remarkably good two years old ewe, a cross of Shropshire on Cotswold, which was awarded first prize in her class. John Campbell had the first prize yearling ewe, a Shropshire grade, and Capt. Robson a good second in a Lincoln grade of fine form and quality. For three grade ewes under a year Douglas Lillico had a very fine trio which ware placed first, with Hanmer & Son second, and Capt. Robson third. Grade wethers under a year, singly, were a choice lot, and Mr. Rutherford scored first with a Leicester grade. D. Lillico was again first with a grade Leicester ewe under a year, and W. E. Wright second with a Shropshire grade.

Sweepstakes. For the best grade wether, any age, Mr. Rutherford won with his grand two years old sheep which had won first at the New York show. Mr. Campbell was awarded the Sweepstakes for best grade ewe, any age, for his fine yearling Shropshire grade ewe.

SWINE AT THE PROVINCIAL FAT STOCK SHOW.

The show of swine at the Provincial Fat Stock Show at Guelph, December 10th to 12th, 1895, was a grand display of high class stock, and most of the breeds were well represented, while the grades and crosses made a very fine show of useful animals. The total number of entries was about 125, and the number of exhibitors about twenty. Berk-

shires were shown by H. J. Davis, Woodstock; J. G. Snell & Bro., Snelgrove; D. A. Graham, Parkhill; John Kitching, Corwhin. The judges for this class were Thos. Teasdale, Concord, and James Main, Milton, with Andrew Elliot, Galt, as referee. In the section for barrows, over 9 and under 18 months, Messrs. Snell were awarded first prize for Sensation, a hog of fine quality, with a grand back, deep in body, full in hams and standing well on his feet. He was a model butcher's hog, and would give a good percentage of lean meat for one in such high condition. The same exhibitors had the second prize entry in Great Scott, a full brother to Sensation and of same litter. Mr. Kitching got third money for Eunuch, a good sort of hog, with good constitution, strong bone and good quality. Messrs. Snell had the three prize winners in class for barrows under 9 months for Count Highclere, Silver King and Star Prince, the former two being of the same litter, sired by Baron Lee 4th, and showing strong Berkshire character, strong, straight legs and good quality of flesh. In sows over 9 and under 18 months, Mr. Davis had the first prize winner in Nellie Oxford, bred by George Green and sired by Royal Hope. She was a sow of good form and quality, with good back and hams. Messrs. Snell had the second prize for Fantasy, a lengthy, level sow of good type but not fat enough to make her best show; they also won first for sows under 9 months, with a sow of strong character, with good lean flesh and good feet. A full sister of same litter was placed second, and Mr. Kitching had a good one for third place. For three pigs, offspring of one sow, Messrs. Snell won first and second, and Mr. Graham third.

Yorkshires. Mr. Featherston was the principal exhibitor in this class, and he showed some very fine specimens of the breed. His sows were especially good. They were not overfed, but showed good quality and a useful type. He won most of the prizes. Mr. H. J. Davis, Woodstock, had a very good sow under 18 months, bred by Mr. Brethour.

Poland Chinas were well represented by entries from the herds of W. & H. Jones, Mt. Elgin, and W. M. & J. C. Smith, Fairfield Plain. The latter firm had the first prize barrow over 9 and under 18 months, a lengthy, well furnished hog with smooth shoulders and good hams. Messrs. Jones were first in barrows under 9 months, with Robin Hood, a long bodied, smoothly-fleshed hog, with full hams and good feet. The sows shown by Messrs. Jones in section over 9 and under 18 months were exceptionally fine. The first prize sow, Black Betsy, is one of the best we have ever seen of the breed. She has great size combined with fine quality, a grand back and head, deep hams. The same firm won second prize, and Messrs. Smith had the third prize winner. The Mt. Elgin herd furnished the first, second and third prize winners in the section for sows under 9 months. For three pigs from one sow, the same exhibitor had the first prize group and Messrs. Smith got second.

Chester Whites were shown by Wm. Butler & Son, Dereham Centre; R. H. Harding, Thorndale; H. George & Sons, Crampton. Mr. Harding had the first prize barrow under 9 and over 18 months in Patron, a hog of good length, smooth form and fine quality. Mr. Butler had a good second in Douglas Third, a good type of the breed and well brought out. In barrows under 9 months, Butler & Son had the first and second prize winners, and they were good smooth ones, well fitted; George & Sons won third prize. For sows under 18 months Butler & Son had the first and third prize winners. They were good types of the breed. Mr. Harding had the second prize sow; she was well brought out, and showed good breeding and fine quality. Mr. Harding also won first and second prizes for sow under 9 months with a beautiful pair of young sows, of fine form and good quality. The same exhibitor won first honors for three pigs of same sow with Patron, Nightingale and Jeanette. Butler & Son got second prize for a good trio.

Tamworths. This class which made so good a showing last year, both in the pure-bred sections and in grades, was not so well represented this year. There were only two exhibitors, Wm. Butler & Son and H. George & Sons. They divided the prizes pretty evenly, the first named firm getting rather the most of the first prizes.

Suffolks and Essex were classed together, Mr. Dorsey and Mr. Frank showing the former and Mr. Featherston the latter, and the prizes being divided between them.

Grades and Crosses were a strong class, and competition was keen. The first and

second prize winners in section for over nine and under eighteen months were a grand pair of Yorkshire-Berkshires, from a Yorkshire boar and Berkshire sow. They were large, lengthy, smooth and full of fine quality, shown by Robert Agnew, Acton. J. G. Snell & Bro. won third place with a very useful Berkshire grade barrow of large size and firm flesh, but not fat enough to show to best advantage. Messrs. Snell had the second and third prize barrows under nine months and they were a good sort. A Poland China grade sow won first as under eighteen months, shown by W. M. & J. C. Smith. The sweepstakes for best grade hog, any age, was worthily won by Mr. Agnew for one of his grade Yorkshire-Berkshire barrows.

DAIRY DEPARTMENT.

A new feature of the show was the successful inauguration of a dairy department. It was somewhat late in the season when the announcement of this new departure was made, and consequently many breeders of dairy cattle were not prepared to enter their cows for competition at the time when the show was held. The main results of the show were so successful, however, that it is expected another year a larger number of exhibitors will compete in the dairy department.

Eleven cows competed, made up of one Shorthorn, four Holsteins, three Ayrshires and three Grades. Prizes were given for the best cow in separate classes for Jerseys, Shorthorns, Holsteins, Ayrshires and Grades. No pure-bred Jerseys entered the competition. There were a number of special prizes given for the best cows in any of the pure breeds, and also a special prize for the best Grade cow.

The money available for the cash prizes amounted to $135, made up of grants of $50 each from the Agriculture and Arts Association and the Dairymen's Associations of Western Ontario, and special donations of $25 from Andrew Pattullo, President of the Western Dairymen's Association, and $10 from J. W. Wheaton, secretary of the same association. Special prizes to the value of $75 were given by the Farmers' Advocate and Home Magazine, London, Ontario; F. W. Hodson, Superintendent Farmer's Institutes, Guelph; John S. Pearce & Co., London, Ontario; The Sun Publishing Co., Toronto, and the Bryant Press, 20 Bay street, Toronto.

The dairy test took the form of a milking trial conducted under the rules of the British Dairy Shows, with the addition of twenty points for constitution and conformation. The following is the scale of points used:

Twenty points for constitution and conformation.
One point for each pound of milk.
Twenty points for each pound of fat.
Four points for each pound of solids (not fat).
One point for each ten days in milk, after the first twenty days. (Limit, 200 days.)
Ten points shall be deducted from the total score for each per cent. of fat below three per cent. of fat in the milk.

The points scored by the individual cows and the awards made in the various classes are tabulated as follows:

of cow.	Breed.	Owner.	Points of constitution.	Pounds of milk.	Average per cent. of fat.	Pounds of fat.	Pounds of solids, not fat	Total points scored.	Awards.
Lady Bright	Shorthorn	H. Wright, Guelph	15.4	45.31	2.55	1.16	4.14	102.07	1st
Calamity Jane	Holstein	A. & G. Rice, Currie's	18.1	69.18	3.16	2.09	6.4	153.06	1st
Eunice Clay	"	" "	17.2	40.68	3.2	1.30	3.22	108.26	
Aaggie Ida 5th	"	Wm. McClure, Norval	16.2	35.53	3.5	1.24	3.11	99.97	
Aaggie Lady of Loraine	"	" "	15.1	47.19	3.45	1.65	4.33	116 11	2nd
Jean Armour	Ayrshire	W. M. Stewart (Jr.) & Son, Menie.	15.9	31.18	3.75	1.17	2.76	87.62	2nd
Ada	"	W. M. & J. C. Smith, Fairfield Plain.	17.3	46.31	3.9	1.79	4.09	119.07	1st
Gusta	"	" " "	15.6	31.13	4.15	1.29	2.95	87.53	
Blue Bell	Grade	D. Keleher	14	21.07	4.8	1.01	1.96	68.61	3rd
Rose	Shorth'n grade	Jas. Bowman, Guelph	14	46.5	3.8	1.77	4.23	113.82	1st
Nancy	Grade	Hugh McDougal, Guelph	15	24	4.6	1.10	2.26	81.04	2nd

The dairy department was under the control of the Dairymen's Association of Western Ontario. The judges were J. W. Wheaton and T. B. Millar, secretary and inspector respectively for that association, and G. E. Day, B.S.A., lecturer on Agriculture and Live Stock, O. A. C., Guelph.

TOTAL ENTRIES FOR 1895.

There were entered in the official prize list:

Cattle.

Shorthorns, 10; Herefords, 7; Polled Angus, 2; Galloways, 2; Devons, 8; Grades, 23. Total entries, 52.

Dairy Department.

Shorthorns, 1; Ayrshires, 3; Holsteins, 5; Grades, 2; Sweepstakes, 23. Total entries, 34.

Sheep.

Cotswolds, Lincolns and Leicesters; 50 entries.

Oxfords, Hampshires and Shropshires; 44 entries.

Southdowns, Dorsets and Merinoes; 57 entries.

Grades, 72.

For special prizes and sweepstakes, 29 entries. Total entries, 252.

Swine.

Berkshires, 20; Yorkshires, 15; Poland Chinas, 17; Chester Whites, 18; Tamworths, 13; Jersey Reds, 7; Suffolks and Essex, 20; Grades, 14. Total entries, 124.

APPENDIX C.

THIRTEENTH ONTARIO PROVINCIAL FAT STOCK AND DAIRY SHOW.

The members elected to represent the various Associations on the Board of the Ontario Provincial Fat Stock and Dairy Show convened in the Ontario Agricultural College, at 2 p m., June 25th, 1896, Mr. James Tolton in the chair. The Associations were represented as follows :

Dominion Cattle Breeders' Association : Messrs. John I. Hobson, Mosboro' ; David McCrae, Guelph, and G. E. Day, O. A. C., Guelph.

Dominion Sheep Breeders' Association : Messrs. James Tolton, Walkerton, and D. G. Hanmer, Burford.

Dominion Swine Breeders' Association : Messrs. J. E. Brethour, Burford ; G. B. Hood, Guelph, and J. C. Snell, Snelgrove.

Dairymen's Association of Eastern Ontario : Messrs. Henry Wade, Toronto, and and R. G. Murphy, Elgin.

Dairymen's Association of Western Ontario : J. W. Wheaton, London.

Deputations from Brantford and Guelph were also present, as follows :

Brantford : Representing the Board of Trade and the Southern Fair Association—Messrs. Geo. Hately and H. A. Foulds.

Guelph : Representing the City Council—His Worship Mayor Lamprey, the names of Messrs. Jno. A. McHardy and Patrick Hartnett being afterwards added. Representing the Board of Trade—Messrs. J. E. McElderry and E. R. Bollert, to which the name of Robert Stewart was afterwards added. Representing the Guelph Fat Stock Club—Messrs. J. M. Duff, James Millar and Jno. McCorkindale, to which were afterwards added Herbert Wright and William Hearn.

Among other leading gentlemen present by invitation were : Dr. Jas. Mills, Prof. Dean, Messrs. A. Johnston, Greenwood ; G. W. Clemons, St. George ; J. B. Spencer, London, and A. Stone, Guelph.

The following officers were elected : President, Jno. I. Hobson ; Vice-President, James Tolton, Walkerton. F. W. Hodson was appointed Secretary-Treasurer, with power to associate with himself, if thought necessary, some one to assist him in the work. The deputations from Brantford and Guelph then addressed the meeting, and after considerable discussion it was decided by a vote of six to four that the show be held, for this year, in Guelph, on the 8th, 9th and 10th of December, and that the Guelph Fat Stock Club, the City Council and the Board of Trade be requested to appoint representatives from their respective bodies, to be placed on committees by the Executive, and to act with the committees already appointed. The Guelph Fat Stock Club to appoint four delegates, the City Council two and the Board of Trade two.

The following was read, re-read clause by clause, and adopted :

PROVINCIAL WINTER SHOW ASSOCIATION.

1. Basis of Agreement, in connection with the Ontario Provincial Winter Show for 1896, between the Societies which are to day represented.

2. The following are the representatives from the various associations :

Dominion Cattle Breeders' Association : John I. Hobson, Mosboro' ; David McCrae, Guelph, and G. E. Day, Guelph.

Dominion Sheep Breeders' Association : James Tolton, Walkerton ; R. Gibson, Delaware ; D. G. Hanmer, Burford, and F. W. Hodson, Guelph.

Dominion Swine Breeders' Association : J. E. Brethour, Burford ; G. B Hood, Guelph ; J. C. Snell, Snelgrove, and F. W. Hodson, Guelph.

Dairymen's Association of Eastern Ontario : Henry Wade, Toronto, and R. G. Murphy, Elgin.

Dairymen's Association of Western Ontario : J. W. Wheaton, B.A., London, and A. F. McLaren, Stratford.

3. The following Associations subscribed funds, as hereafter mentioned, to be awarded as prizes in their respective departments :

Dominion Cattle Breeders' Association	$1,145
Dominion Sheep Breeders' Association	1,149
Dominion Swine Breeders' Association	977
Dairymen's Association of Eastern Ontario	50
Dairymen's Association of Western Ontario	50

The Guelph Fat Stock Club agree to provide suitable and ample accommodation. This to include the provision of a suitable building well lighted by day and night, and containing an ample water supply conveniently located in the building ; sufficient hurdles to properly enclose the animals in pens of suitable size ; ample feeding troughs for each pen ; enough straw to bed the animals comfortably and keep them clean ; also a suitable board room, heated, lighted and provided with tables and chairs ample for requirements.

4. The delegates of each Association represented shall conduct or assist in conducting the respective departments to which said Association grants money to be given in prizes. If any society offer all the money offered in a department, said society, together with the Executive Committee, shall have full control of said department. But if the prize money in any department is provided by several societies, each of which is represented on the board, such societies shall be equitably represented on the committee in charge of the department, according to the money granted to said department.

5. In case all the prize money offered in any department is not won by the exhibitors, said money shall be returned to the society which granted it ; but if one or more societies or individuals grant money to said department, the money not won shall be returned to each society or individual in proportion to the amount subscribed by each society or individual.

6. The receipts obtained in connection with the Provincial Winter Show shall be pooled.

7. The expenses in connection with the Provincial Winter Show and the expenses of the Executive shall first be paid out of the funds received, as entrance fees or otherwise, and if a balance remain it shall be equitably divided in the same manner as set forth in clause 5, between the societies which subscribed towards the prize list.

8. If the receipts do not meet the expenses, each Association which subscribed to the prize list shall pay an equitable proportion of said balance.

9. The duties and powers of officers and directors, and of the committees of this Association shall be the same as in the case of the Dominion Cattle Breeders' Asoociation, and that the by-laws of that Association shall, as far as they apply, govern this Association.

Committees.

The following committees were appointed :

Executive : The President, Vice-President, Secretary, Dr. James Mills, G. E. Day, J. M. Duff, Jno. McCorkindale J. E. McElderry, Robert Stewart and A. Crosbie.

Cattle : The representatives of the Cattle Breeders' Association, with A. Johnston, Wm. Rennie, Jas. Millar, Herbert Wright and Wm. Hearn.

Sheep: The representatives of the Sheep Breeders' Association, with Patrick Hartnett.

Swine: The representatives of the Swine Breeders' Association, with John A. McHardy.

Dairy: The representatives of the Dairy Associations, with Prof. Dean.

Ontario Agricultural College: Dr. James Mills and Mr. Wm. Rennie.

Superintendent of Building: Jno. McCorkindale.

General Rules and Regulations.

1. Entries should be made on or before November 25th by application to the Secretary, who will furnish blank applications on which to specify exhibitor's name and address, with age and description of animal offered. Entries received after November 25th will be charged double fees. No entries will be received after December 2nd, 1896.

2. All cattle shown in the pure-bred classes must be recorded in Canadian records, or in reputable English or American records.

All swine shown in the pure-bred classes, must be recorded in Canadian records.

Each sheep shown in the pure-bred classes must be recorded in Canadian records or in reputable English or American records, and shall be labelled with the Record Association tag. All animals shown in the pure-bred classes in the younger sections, when not otherwise specified, must have been bred by the exhibitor. In the grade classes, statements naming the number and kind of crosses must be given at the time of making entry.

3. The following fees will be charged and must accompany applications for entry, for which accommodation will be provided: For each head of cattle, $2; for each sheep or hog, $1; for pen of sheep or swine, $1 per entry.

4. Every animal must be entered for competition, giving name of breeder or owner, and when pure-bred, the age and record, name and number must be given at the time of making entry. Each animal must be shown in the section of the class to which it belongs.

5. A card will be furnished the exhibitor at the time of making the entry, specifying the class, the number of the section, and the number of the entry, which card must remain attached to the animal during the exhibition; but in the case of sheep, pigs and poultry, the card shall be attached to the pen or coop.

6. No animal shall compete for a sweepstake prize that has not been shown in a regular class, or is eligible to be shown in such a class, except when otherwise stated.

7. Each exhibitor of pure-bred cattle must be a member of the Dominion Cattle Breeders' Association. Each exhibitor of pure-bred sheep must be a member of the Dominion Sheep Breeders' Association. Each exhibitor of pure-bred swine must be a member of the Dominion Swine Breeders' Association.

8. Diligence will be used by the officers of the Board to prevent injury to, or loss of property, but they will not be responsible for any loss or damage that may occur.

9. The exhibition will open at 8 a.m., December 8th, and close at 12 p.m. (midnight) December 10th, 1896. The exhibitors will be allowed to remove animals after 12 o'clock p.m., on the 10th instant. Admission will be charged until 12 o'clock p.m. of the 10th instant.

Animals.

1. No animal shall be removed until the close of the exhibition.

2. All stock, other than that competing in the dairy classes, must be in the stalls or pens on Tuesday, December 8th, at 1 o'clock p.m. Stock competing in the dairy classes must be in the stalls not later than 2 p.m., December 7th, but if the owners desire it they may be brought Saturday, December 5th. Preparations to receive them will be completed Friday, December 4th.

3. Cattle must be well halter broken; no vicious animal will be admitted.

4. The age of all animals to be computed to the 1st of December.

Awarding Committees.

1. Awarding committees will consist of two judges and a reserve judge for each class or classes.

2. Awarding committees will commence examination on the second day of the show, at 10.30 o'clock, and continue until awards are completed.

3. No person shall act as judge of any lot in which he may be interested as an exhibitor, the agent or employee of an exhibitor or otherwise.

4. No animal deemed unworthy shall be awarded a premium, but no premium shall be withheld merely because there is no competition.

5. In case of protest notice must be given to the secretary before, or during the examination of, the animal or article protested, or within four hours after the close of said examination a written statement setting forth the reason for protesting must be filed with the secretary on the day the notice is given, and a deposit of $5 left with the protest, and forfeited if the protest is not sustained.

6. In all cases where protests are entered for improper or malignant purposes, the Board shall exclude the party protesting from exhibition for two years thereafter.

7. Any exhibitor who shall tear off a premium ribbon, or authorize another to do so, in the presence of the judges, or shall otherwise insult the judges, shall forfeit the premium and be excluded from competition.

8. Judges are instructed that if they have good reason to believe that an exhibitor, by false entry or otherwise, attempts to deceive the committee or the public, and obtain an award by misrepresentation, they shall report the fact at once to the secretary, who shall report the same to the directors, who may expel such exhibitor for fraud for at least two years, and may withhold all or any prizes awarded to said exhibitor.

9. The entry books must be returned by the judges of each department to the secretary as soon as the awards in each are completed.

10. Great care must be exercised to preserve the judges' books, and the awards must be entered as above in a plain, legible manner in the proper place, as the premiums will be paid on authority of these entries only.

11. Judges will be particular to observe the following: Red ribbons are designed for first premiums; blue ribbons for second premiums; white ribbons for third premiums; green ribbons for fourth or highly commended; and yellow ribbons for fifth or commended.

12. Decisions of judges shall be final; and no appeal will be considered except in cases of fraud and protests.

13. Objections to a person serving as judge must be submitted to the secretary in writing before the judge enters upon his duties, and give good and sufficient reasons therefor.

14. Any exhibitor attempting to interfere with judges during their adjudications will be promptly excluded from competition.

General Superintendent.

1. The superintendent shall have charge of the building and caretaker, etc. He will designate the hours of delivery of feed, forage and bedding for animals on exhibition, which can be obtained on application to him at reasonable rates. Stalls and pens shall be cleaned before eight o'clock, and kept clean until 10 p.m. each day of the show. The aisles and passages shall be kept clean and unencumbered. Feed or bedding shall not be placed in the aisles or littered about the building, but all parts thereof shall be kept scrupulously clean and tidy.

Admission Fees.

1. Tickets admitting gentlemen, 25 cents. Ladies free. Boys under twelve years, 10 cents.

Prize List.

All stock must be in the stalls not later than 1 p.m., Tuesday, December 8th.

Cattle.

Class 1.—*Shorthorns. Pedigrees to be produced.*

Sec.		$ c.
1.	Best steer, 2 years and under 3	20 00
	2nd "	15 00
	3rd "	10 00
	4th "	highly commended.
	5th "	commended.
2.	Best steer, 1 year and under 2	20 00
	2nd "	15 00
	3rd "	10 00
	4th "	highly commended.
	5th "	commended.
3.	Best steer, under 1 year	15 00
	2nd "	10 00
	3rd "	5 00
	4th "	highly commended.
	5th "	commended.
4.	Best cow or heifer, 3 years and over	15 00
	2nd "	10 00
	3rd "	5 00
	4th "	highly commended.
	5th "	commended.
5.	Best heifer, 3 years old	15 00
	2nd "	10 00
	3rd "	5 00
	4th "	highly commended.
	5th "	commended.
6.	Best heifer, under 2 years	15 00
	2nd "	10 00
	3rd "	5 00
	4th "	highly commended.
	5th "	commended.

The following prizes are offered by the Dominion Shorthorn Breeders' Association:

Class 2.—*Shorthorn Grades.*

Sec.		$ c.
1.	Best steer, 2 years and under 3	15 00
	2nd "	10 00
	3rd "	5 00
	4th "	highly commended.
	5th "	commended.
2.	Best steer, 1 year and under 2	15 00
	2nd "	10 00
	3rd "	5 00
	4th "	highly commended.
	5th "	commended.
3.	Best steer, under 1 year	15 00
	2nd "	10 00
	3rd "	5 00
	4th "	highly commended.
	5th "	commended.

Special prize given by the Dominion Shorthorn Breeders' Association—$20.00—to be awarded to the best registered Shorthorn steer, any age.

Class 3.—*Herefords and Polled Angus. Pedigrees to be produced.*

Sec.		$ c.
1.	Best steer or heifer, 2 years and under 3	20 00
	2nd "	15 00
	3rd "	10 00
	4th "	highly commended.
	5th "	commended.
2.	Best steer or heifer, 1 and under 2	20 00
	2nd "	15 00
	3rd "	10 00
	4th "	highly commended.
	5th "	commended.
3.	Best steer or heifer, under 1 year	15 00
	2nd "	10 00
	3rd "	highly commended.
	4th "	commended.
4.	Best cow or heifer, 3 years and over	20 00
	2nd "	15 00
	3rd "	highly commended.
	4th "	commended.

Class 4.—*Galloways and Devons. Pedigrees to be produced.*

Sections and prizes similar to those in Class 3.

Class 5.—*Grades or Crosses of any Breed.*

Sec.		$ c.
1.	Best steer, 2 and under 3 years	25 00
	2nd "	20 00
	3rd "	10 00
	4th "	highly commended.
	5th "	commended.
2.	Best steer, 1 and under 2 years	20 00
	2nd "	15 00
	3rd "	10 00
	4th "	highly commended.
	5th "	commended.
3.	Best steer, under 1 year	15 00
	2nd "	10 00
	3rd "	5 00
	4th "	highly commended.
	5th "	commended.
4.	Best cow or heifer, 3 years and over	20 00
	2nd "	15 00
	3rd "	10 00
	4th "	highly commended.
	5th "	commended.
5.	Best heifer, over 2 and under 3 years	15 00
	2nd "	10 00
	3rd "	5 00
	4th "	highly commended.
	5th "	commended.
6.	Best heifer, under 2 years	15 00
	2nd "	10 00
	3rd "	5 00
	4th "	highly commended.
	5th "	commended.

Any money prizes in Class 5 won by Hereford grades or crosses will be increased 25 per cent. by the Canadian Hereford Breeders' Association.

Prizes in Class 5 won by grade Herefords, sired by a registered Hereford bull (name and number of bull to accompany entry), will be increased 25 per cent. by H. D. Smith, of Compton, Que.

Class 6.—*Championship Prize.*

For the best fat animal on the ground, of any breed or sex, $20, given by W. C. Edwards, M.P., Rockland, Ont.

If this prize is won by a Hereford or grade Hereford, $25 extra will be donated by the Canadian Hereford Breeders' Association.

If this prize is won by a Hereford or grade Hereford with at least two registered crosses, $50 extra will be donated by H. D. Smith, Esq., of Compton, Que.

SHEEP.

All stock must be in the stalls not later than 1 p.m. Tuesday, Dec. 8th.

Class 7.—*Cotswolds.*

Sec.			$ c.
1.	Best ewe, one year and under 2		15 00
	2nd	"	10 00
	3rd	"	5 00
	4th	"	highly commended.
	5th	"	commended.
2.	Best ewe, under 1 year		10 00
	2nd	"	6 00
	3rd	"	4 00
	4th	"	highly commended.
	5th	"	commended.
3.	Best wether, 1 year and under 2		15 00
	2nd	"	10 00
	3rd	"	5 00
	4th	"	highly commended.
	5th	"	commended.
4.	Best wether, under 1 year		10 00
	2nd	"	6 00
	3rd	"	4 00
	4th	"	highly commended.
	5th	"	commended.
5.	Best 3 wethers, under 1 year		20 00
	2nd	"	15 00
	3rd	"	10 00
	4th	"	highly commended.
	5th	"	commended.

Class 8.—*Lincolns.* Sections and prizes same as in Class 7.

Class 9.—*Leicesters.* Sections and prizes same as in Class 7.

Class 10.—*Oxfords.* Sections and prizes same as in Class 7.

Class 11.—*Shropshires.* Sections and prizes same as in Class 7.

Class 12.—*Southdowns.* Sections and prize ssame as in Class 7.

Class 13.—*Dorset Horns and Merinos.*

Sec.			$ c.
1.	Best ewe, 1 year and under 2		10 00
	2nd	"	6 00
	3rd	"	4 00
	4th	"	highly commended.
	5th	"	commended.
2.	Best ewe, under one year		10 00
	2nd	"	6 00
	3rd	"	4 00
	4th	"	highly commended.
	5th	"	commended.
3.	Best wether, 1 year and under 2		10 00
	2nd	"	6 00
	3rd	"	4 00
	4th	"	highly commended.
	5th	"	commended.
4.	Best wether, under 1 year		10 00
	2nd	"	6 00
	3rd	"	4 00
	4th	"	highly commended.
	5th	"	commended.

Class 14a.—*Hampshires and Suffolks.* Sections and prizes same as in Class 13.

Class 14b.—Sweepstakes.

For best sheep, any breed, grade or age, a Spramotor. With this device fruit trees and potatoes can be rapidly sprayed or whitewashing can be done by one man faster than ten men can do it with brushes, the work will be better done and there will be less waste. It is a model outfit where only line of hose is required. The addition of the "Y" connection and two nozzles provides an effective means by which one man can do the work of two in an orchard or potatoe field. This is a strictly high-class outfit and retails for $18.10. It was the winner at the spraying contest held at Grimsby, April 2nd, 1896, and conducted under the auspices of the board of control of the Provincial Fruit Experiment Stations.

Messrs. William Cooper & Nephews, of Galveston, Texas, offer for the fourth time the sterling silver cup, valued at $100, as a sweepstake prize for the best sheep bred by the exhibitor and shown at the next Ontario Provincial Fat Stock Show, to be held in the city of Guelph, December 8th, 9th and 10th, 1896.

To become final owner, an exhibitor must win the cup twice in succession or on three separate occasions. It was won in 1893 by Mr. Henry Arkell, of Arkell, Ont., with an Oxford ewe. In 1894 by Mr. John Campbell, Woodville, with a Shropshire ewe lamb, bred by exhibitor. In 1895 by Gibson & Walker, Denfield, with a Lincoln weather, 19 months, weight, 315 pounds, bred and fed by exhibitors.

Prizes offered by the American Shropshire Record Association.

Grand sweepstakes premium of the show, if won by registered Shropshire sheep, $50.

Best registered Shropshire wether, one year old and under two—first premium, $10; second premium, $6; third premium, $3.

Best registered Shropshire wether, under one year old—first premium, $10; second premium, $6; third premium, $3.

Best three registered Shropshire wether lambs—first premium, $10; second premium, $6; third premium, $3.

Extra special premiums for best weather, sired by registered Shropshire ram, out of grade ewe, one year old and under two—first premium, $10; second premium, $6.

Under one year old—first premium, $10; second premium, $6.

Sheep to be eligible to compete for any premiums offered by this Association must be recorded and have a number in the record, a certificate of which must be filed with each entry certificate made. Each registered sheep must bear an ear tag with number and initials corresponding to that given on the certificate, and all must be owned by the exhibitor at least ten days before going into the ring.

Secretaries of fairs will observe the above requirements. The above will not apply to entries made for grade sheep.

Special premiums offered by the American Southdown Breeders' Association.

The first five volumes of the American Southdown Record for pen of "four lambs," two rams and two ewes, bred and owned by exhibitor.

This premium is offered, conditioned:

1. That the animals competing for said premium shall be recorded in the American Southdown Record prior to date of making entry for exhibition, and that the party making entry shall furnish the secretary of the American Southdown Breeders' Association, at the time of entry, a copy of same.

2. That the premium will be paid on the presentation of certificate from the proper officer of the fair.

3. That this offering and conditions be printed in the premium list of the fairs in connection with the classification of sheep, or that reference be made at the close of said classification, to the publication of this announcement elsewhere in the premium list

Class 15.—*Grades and Crosses.*

Sec.		$ c.
1.	Best ewe, 1 year and under 2	12 00
	2nd "	8 00
	3rd "	4 00
	4th "	highly commended.
	5th "	commended.
2.	Best wether, 1 year and under 2	12 00
	2nd "	8 00
	3rd "	4 00
	4th "	highly commended.
	5th "	commended.
3.	Best 3 wethers, under 1 year	12 00
	2nd "	8 00
	3rd "	4 00
	4th "	highly commended.
	5th "	commended.
4.	Best wether, under 1 year	8 00
	2nd "	6 00
	3rd "	4 00
	4th "	highly commended.
	5th "	commended.
5.	Best ewe, under 1 year	8 00
	2nd "	6 00
	3rd "	4 00
	4th "	highly commended.
	5th "	commended.
6.	Best sheep, under 2 years	10 00
	2nd "	highly commended.
	3rd "	commended.

SWINE.

All stock must be in the stalls not later than 1 p.m., Tuesday, December 8th.

Class 16.—*Berkshires.*

Sec.		$ c.
1.	Best barrow, 9 months and under 15	12 00
	2nd "	8 00
	3rd "	4 00
	4th "	highly commended.
	5th "	commended.
2.	Best barrow, 6 months and under 9	10 00
	2nd "	6 00
	3rd "	4 00
	4th "	highly commended.
	5th "	commended.

Sec.			$ c.
3. Best sow, 9 months and under 15			12 00
2nd	"		8 00
3rd	"		4 00
4th	"		highly commended.
5th	"		commended.
4. Best sow, 6 months and under 9			10 00
2nd	"		6 00
3rd	"		4 00
4th	"		highly commended.
5th	"		commended.
5. Best sow or barrow, under 6 months			8 00
2nd	"		6 00
3rd	"		4 00
4th	"		highly commended.
5th	"		commended.
6. Best 3 pigs, the offspring of 1 sow, bred by exhibitor			15 00
2nd	"	"	10 00
3rd	"	"	highly commended.
4th	"	"	commended.

Class 17.—*Yorkshires.* Sections and prizes same as in class 16.

Class 18.—*Chester Whites.* Sections and prizes same as in class 16.

Class 19.—*Poland Chinas.* Sections and prizes same as in class 16.

Class 20.—*Suffolks and Essex.* Sections and prizes same as in class 16.

Class 21.—*Tamworths.*

Sec.			$ c.
1. Best barrow, 9 months and under 15			12 00
2nd	"		8 00
3rd	"		highly commended.
4th	"		commended.
2. Best barrow, 6 months and under 9			10 00
2nd	"		6 00
3rd	"		highly commended.
4th	"		commended.
3. Best sow, 9 months and under 1			10 00
2nd	"		6 00
3rd	"		highly commended.
4th	"		commended.
4. Best sow, 6 months and under 9			10 00
2nd	"		6 00
3rd	"		highly commended.
4th	"		commended.
5. Best sow or barrow, under 6 months			8 00
2nd	"		6 00
3rd	"		highly commended.
4th	"		commended.
6. Three pigs, offspring of one sow, bred by exhibitor			10 00
2nd	"	"	6 00
3rd	"	"	highly commended.
4th	"	"	commended.

Class 22.—*Jersey Reds.* Sections and prizes same as class 21.

Class 23.—*Sweepstakes.*

Sec.		$ c.
1. Best pure-bred barrow, any age or breed		15 00
2nd	"	highly commended.
3rd	"	commended.
2. Best pure-bred sow, any age or breed		15 00
2nd	"	highly commended.
3rd	"	commended.

Class 24.—*Grades and Crosses.*

Sec.		$ c.
1. Best barrow, 9 months and under 15		12 00
2nd	"	8 00
3rd	"	4 00
4th	"	highly commended.
5th	"	commended.

Sec.			$ c.
2.	Best barrow, under 9 months		12 00
	2nd	"	8 00
	3rd	"	4 00
	4th	"	highly commended.
3.	Best sow, 9 months and under 15		12 00
	2nd	"	8 00
	3rd	"	4 00
	4th	"	highly commended.
	5th	"	commended.
4.	Best sow, under 9 months		12 00
	2nd	"	8 00
	3rd	"	4 00
	4th	"	highly commended.
	5th	"	commended.

DAIRY DEPARTMENT.

Rules and Regulations governing other departments apply to this department also, with the addition of the following :

Cows must all be giving milk, and the awards shall be made by the following scale :

Twenty points for constitution and conformation.

One point for each pound of milk.

Twenty points for each pound of fat.

Four points for each pound of solids (not fat).

One point for each ten days in milk, after the first twenty days. (Limit, 200 days.)

Ten points shall be deducted from the total score for each per cent. of fat. below three per cent. of fat in the milk.

The milking competition shall extend over forty-eight hours, and will take place on Tuesday and Wednesday, December 8th and 9th. Rations fed to competing cows will not be considered. Exhibitors may have the privilege of milking their cows twice or three times during each day. When the cows are to be milked only twice each day, they shall be milked dry in the presence of the judges at 6 p.m. on the evening of December 7th, and the test will conclude at 6 p m. on December 9th. When the cows are to be milked three times during each day, they shall be milked dry in the presence of the judges at 9 p.m. on the evening of December 7th, and the test will conclude at 9 p.m. on December 9th The percentage of fat in the milk will be determined by the Babcock Milk Tester, and the percentage of solids, not fat, will be determined by ascertaining the specific gravity of the milk and then estimating the amount of solids, not fat, by use of the authorized formula for that purpose.

Exhibitors will be held responsible for the safe keeping of their cows during the test.

All stock must be in the stalls not later than 2 p.m., Monday, December 7th. (See clause 2, under animals.)

Class 25.

Section.		*1st.*	*2nd.*	*3rd.*	*Fourth.*	*Fifth.*
1.	Best Shorthorn cow.....(36 months and over)	$25	$15	$10	Highly commended.	Commended.
2.	" " " .....(under 36 months) ..	25	15	10	"	"
3.	" Ayrshire " .....(36 months and over)	25	15	10	"	"
4.	" " " .....(under 36 months) ..	25	15	10	"	"
5.	" Holstein " .....(36 months and over)	25	15	10	"	"
6.	" " " .....(under 36 months) .	25	15	10	"	"
7.	" Jersey or Guernsey cow (36 months and over)	25	15	10	"	"
8.	" " " (under 36 months) ..	25	15	10	"	"
9.	" Grades cow .....(36 months and over)	25	15	10	"	"
10.	" " .....(under 36 months) ..	25	15	10	"	"

Class 26.—*Dairy Test.*

Best dairy cow, any age, breed or grade, judged according to the rules governing the Dairy Department.

First. A plow, value $15, donated by the Wilkinson Plow Co., Ltd., Toronto, Ont.

Second. A No. 1 Leader corn and root cultivator, value $10, donated by Thom's Implement Works, Watford, Ont.

Third. Highly commended.

Fourth. Commended.

Fifth. Reserve.

The Holstein-Friesian Association of America offers as specials in this class, $25 for the first and $15 for the second, to be paid to any Holstein-Friesian cows winning premiums in competition with cattle of other breeds, providing such animals are recorded in the herd book of said Association.

The following prizes are offered as specials in this class by the Canadian Holstein-Friesian Association. For the best dairy cow $25. For the two next best Holstein-Friesian dairy cows, registered in the C. H. F. H. B., $15 and $10, respectively.

JUDGES.

Cattle.

Thos. Crawford, M.P.P., Toronto; James Smith, Brantford. Reserve, James Russell, Richmond Hill.

Sheep.

Cotswolds: Wm. Thompson, Uxbridge, and Jos. Gaunt, St. Helen's. Reserve, E. Parkinson, Eramosa.

Lincolns: E. Parkinson, Eramosa, and Jos. Gaunt, St. Helen's. Reserve, Wm. Thompson, Uxbridge.

Leicesters: Jos. Gaunt, St. Helen's, and Wm. Thompson, Uxbridge. Reserve, E. Parkinson, Eramosa.

Shropshires: T. M. Whitesides, Innerkip, and Henry Arkell, Teeswater. Reserve, J. Miller, Markham.

Southdowns: J. Miller, Markham, and Henry Arkell, Teeswater. Reserve, T. M. Whitesides, Innerkip.

Oxfords: Henry Arkell, Teeswater, and J. Miller, Markham Reserve, T. M. Whitesides, Innerkip.

Horned Dorsets and Hampshires: T. M. Whitesides, Innerkip, and Henry Arkell, Teeswater. Reserve, J. Miller, Markham.

Grades: Wm. Thompson, Uxbridge, and T. M. Whitesides, Innerkip. Reserve, Henry Arkell, Teeswater.

Swine.

Chester Whites, Poland Chinas, Jersey Reds and Grades. Joseph Featherston, M.P., Streetsville; Jos. Brethour, Burford. Reserve, J. C. Snell, Snelgrove.

Berkshires, Yorkshires, Suffolks and Essex, and Tamworths. Thos. Teasdale, Concord, and James Main, Milton. Reserve, Andrew Elliot, Galt.

The sweepstake prizes to be awarded by the acting judges in both classes.

Dairy.

J. W. Wheaton, London, Secretary Western Dairymen's Association; R. G. Murphy, Elgin, Secretary Eastern Dairymen's Association; and Prof. Dean, O. A. C., Guelph.

DOMINION SHORTHORN BREEDERS' ASSOCIATION.

DOMINION AYRSHIRE BREEDERS ASSOCIATION.

HACKNEY HORSE SOCIETY.

CLYDESDALE HORSE ASSOCIATION.

SHIRE HORSE ASSOCIATION.

CANADIAN HORSE BREEDERS' ASSOCIATION.

THE SHORTHORN BREEDERS' ASSOCIATION.

ANNUAL MEETING.

The tenth annual meeting of the directors of the Shorthorn Breeders' Association was held in the Albion Hotel, Toronto, Wednesday, February 12th, 1896, at 8 o'clock, p.m.

Present: Arthur Johnston, President, Greenwood; Jas. Russell, Richmond Hill; John I. Hobson, Mosboro'; Wm. G. Pettit, Freeman; Wm. Linton, Aurora; Robt. Miller. Brougham; W. G. Biggins, Clinton; John Isaac, Markham; Edward Jeffs, Bond Head, and H. Wade, Secretary, Toronto.

President JOHNSTON explained that the executive committee, that is, Messrs. Russell, Hobson, Miller and himself, thought it was necessary to call the Board together to place before them the result of the year's work.

It was also necessary to consider the most serious matter that ever came before them since the inauguration of the Shorthorn Breeders' Association.

He had taken the liberty to hurriedly write a letter to one of the railway companies, and Mr. Wade consulted with Mr. Tiffin of the C. P. R. A representative of the C. P. R. was also present. Mr. Johnston then asked the Secretary to read the letter which he had written to Mr A. White, of the G. T. R. After this was done, he explained to those present how under the old classification the rates for shipping bullocks were nearly four times lower than they were at present, because under the new classification all animals (no matter how old or young they were) were rated at 4,000 pounds, while under the old classification an animal under one year was rated at 1,000 pounds, from, one to two 3,000 pounds, and from two upwards 4,000 pounds, and this new classification was a tax the breeders simply could not stand.

Mr. MILLER, in speaking to the letter, said that Mr. J. J. Hill, of the St. Paul Minneapolis and Manitoba Railway not only carried the bulls free all along his line, but also imported a very large number of bulls in order that good stock would be produced, then the breeders would ship their stock to England and the States, and in the end traffic would be greatly increased over the railroad. He thought the railway companies here were injuring their own trade by putting such a high tax on these young bullocks.

Mr. MCMULLEN, representative from the C. P. R., explained to the members of the Board that one great reason the tariff was raised on these young bulls was because they had to put on a special car as they could not put them in with general merchandise; but on leaving he assured the members he would lay their objection to the new classification before Mr. Tiffin, General Freight Agent, and see what could be done in the matter.

The regular business was then proceeded with, and Mr. WADE read his annual report.

Mr. JOHN I. HOBSON also read his report as secretary to the executive committee, and explained to the Board the reason the committee expenses were so high was because of frequent trips to the city on account of the fire. He also referred to the changes they had made in lowering the fees, which he hoped would be agreeable to the whole Board.

The members of the Board were well satisfied with the work the executive committee had been doing, and it was moved by WILLIAM LINTON, seconded by W. J. BIGGINS, that Secretary Wade's annual report, and John I. Hobson's report of the executive committee be adopted. Carried unanimously.

The matter of the Board's expenses being paid while attending meetings was taken up, and it was moved, seconded and carried unanimously, that the railway expenses of the Board be paid in future.

A short discussion then took place as to the present transfer system.

Mr. GIBSON thought the transfer should be made free of charge if sent in within thirty days from the time of sale, but as the other members differed, it was finally moved by Mr. ROBT. MILLER and seconded by Mr. HOBSON, "That in the opinion of this meeting it is the duty of the seller to furnish a written certificate of transfer to the purchaser of the animal, and it is also the duty of the purchaser to have that recorded." Carried unanimously.

F. W. HODSON, who came in towards the latter part of the meeting, asked that a committee from this Board be appointed to go with a committee from the Cattle Breeders' Association on the following day and wait on the Hon. John Dryden, Minister of Agriculture.

The following gentlemen were appointed: Messrs. Johnston, President; Russell, Linton, Tolton, Isaac, Gibson, Jeffs and Pettit.

The meeting adjourned at 10.30 p.m.

The meeting of February 13th convened in Shaftesbury Hall, President JOHNSTON in the Chair.

Members present: Jas. M. Gardhouse, Highfield; J. C. Snell, Snelgrove; William Dawson, Victoria; James Russell, Richmond Hill; W. G. Pettit, Freeman; Wm. Linton, Aurora; Robt. Miller, Brougham; John I. Hobson, Mosboro'; David Milne, Ethel; Jas. Tolton, Walkerton; Edward Jeffs, Bond Head; William Redmond, Millbrook; W. J. Biggins, Clinton; John A. Hardy, Kent Bridge; Wm. Weld, London; John Isaac, Markham; Robt. R. Wright, Guelph; Jas. I. Davidson, Balsam; W. W. Ballantyne, Stratford; R. C. McCullough, Georgetown; Geo. Tucker, Bosworth; J. Watson, Greenbank; John Taylor, Rockwood; Richard Gibson, Delaware; T. E. Robson, Ilderton, and H. Wade, Secretary, Toronto.

After a few introductory remarks of a general nature by the President, the Secretary read the Annual Report, as follows:

TENTH ANNUAL REPORT OF THE SECRETARY AND EXECUTIVE COMMITTEE.

The Executive Committee beg to present the Tenth Annual Report of the affairs of this Association as furnished by the Secretary for the year ending 31st December, 1895.

REGISTRATIONS.

In 1895, as near as can be ascertained, we were paid for 3,000 registrations, 3,100 certificates, and 450 changes of ownership; against in 1894, 3,045 registrations, 3,142 certificates, and 493 transfers; and against in 1893, 3,484 registrations, 3,142 certificates, and 587 transfers.

REGISTRATION FEES.

Following up the change in registrations as a matter of course, there is a corresponding change in registration fees. In 1890 we received $3,043.75; in 1891, $3,152.50; in 1892, $3,895.25; in 1893, $3,787.45; in 1894, $3,357.75, and in 1895, approximately $3,222.00.

HERD BOOKS.

Vol. I.—There were sent out in 1887, 550 volumes; in 1888, 51 volumes; in 1889, 33 volumes; in 1890, 19 volumes; in 1891, 21 volumes; in 1892, 27 volumes; in 1893, 18 volumes; in 1894, 20 volumes; and in 1895, 1 volume, to members and others, also 161 volumes burnt, leaving on hand 99 volumes.

Vol. II.—There were sent out in 1888, 451 volumes; in 1889, 39 volumes; in 1890, 26 volumes; in 1891, 16 volumes; in 1892, 20 volumes; in 1893, 14 volumes; in 1894, 16 volumes; and in 1895, 2 volumes, to members and others, also 118 volumes burnt, leaving on hand 298 volumes.

Vol. III.—There were sent out in 1888, 226 volumes; in 1889, 189 volumes; in 1890, 46 volumes; in 1891, 16 volumes; in 1892, 19 volumes; in 1893, 10 volumes; in 1894, 17 volumes; and in 1895, 4 volumes, to members and others, also 74 burnt, leaving on hand 396 volumes.

Vol. IV.—There were sent out in 1889, 302 volumes; in 1890, 105 volumes; in 1891, 29 volumes; in 1892, 21 volumes; in 1893, 5 volumes; in 1894, 13 volumes; and in 1895, 4 volumes, to members and others; also 122 volumes burnt, leaving on hand 396 volumes.

Vol. V.—There were sent to members in 1890, 134 volumes; in 1891, 130 volumes; in 1892, 78 volumes; in 1893, 39 volumes; in 1894, 33 volumes; and in 1895, 9 volumes, to members and others, also 206 volumes burnt, leaving on hand 391 volumes.

Vol. VI.—There were sent out in 1891, 345 volumes; in 1892, 29 volumes; in 1893, 32 volumes; in 1894, 29 volumes; and in 1895, 9 volumes, to members and others, also, 165 volumes burnt, leaving on hand 391 volumes.

Vol. VII.—There were sent out in 1892, 318 volumes; in 1893, 28 volumes; in 1894, 33 volumes; and in 1895, 17 volumes, to members and others, also 241 volumes burnt, leaving on hand 303 volumes.

Vol. VIII.—There were sent out in 1893, 304 volumes; in 1894, 38 volumes; and in 1895, 25 volumes, to members and others, also 258 volumes burnt, leaving on hand 375 volumes.

Vol. IX.—There were sent out in 1894, 269 volumes; in 1895, 46 volumes, to members and others, also 312 volumes burnt, leaving on hand 373 volumes.

Vol. X.—There were sent out to members in 1895, 317 volumes; there was also 40 volumes burnt, leaving on hand 643 volumes.

Vol. XI. is completed, and will contain all the pedigrees returned to us to copy recorded up to 1895, and as in Volume VII. and subsequent volumes, each pedigree can be traced in its entirety by referring to the pedigree of another animal in the same volume, making the volume complete in itself. In this volume the cows are printed under the name of each owner. This plan debars us from numbering the females at the time of recording. It will be sent out immediately.

Vol. XII., containing all the pedigrees recorded in 1895, has been closed, and will be printed at once.

Pedigrees on Record.

Volume I. contains	3,304
" II. "	4,427
" III. "	4,593
" IV. "	4,957
" V. "	4,388
" VI. "	5,904
" VII. "	4,954
"VIII. "	4,024
" IX. "	3,633
" X. "	3,669
" XI. "	3,213
" XII. will contain about	3,000
	50,066

As shown by the above table, we are now recording for the thirteenth volume, which will contain animals recorded in 1896.

Number of Members from Inception to Date.

	New.	Resigned and Lapsed.	Not Paid.	Paid.	Total Paid.
B. A., 1882	164	..	..	164	164
" 1883	73	..	..	164	237
" 1884	42	..	..	173	215
" 1885	39	..	..	187	220
Dom. S. H. B. Association, 1886	215	37	8	195	410
" " " 1887	80	54	81	357	437
" " " 1888	46	79	69	388	434
" " " 1889	36	37	91	398	434
" " " 1890	29	33	74	405	434
" " " 1891	32	67	59	365	397
" " " 1892	60	22	47	398	458
" " " 1893	49	38	92	349	398
" " " 1894	66	72	88	318	384
" " " 1895	60	..	..	290	350

This table shows that our paid-up membership roll has decreased 34 in the last year in total numbers. Our income from members' fees for 1895 was approximately $1,400.

Office Work.

The work of the office has been very much augmented by reason of the fire, which on the 3rd of March last wholly destroyed all the manuscript for the eleventh volume, all the vouchers stored for the last twelve years, the caligraph, 1,697 bound volumes of the Herd Book, together with the copies of the English and American Herd Books. Fortunately there was $2,500 insurance on the stock.

The eleventh volume was to have been placed in the hands of the printer the week following, and in all probability it would have been completed and mailed to subscribers by midsummer. Instead of that, circulars had t be sent out to breeders asking them to send in all pedigrees recorded in 1894 and the first two months of 1895. A great many responded to this call. A second request was made, and a good many more were sent in. Still we regret to say, that in 1,873 bulls recorded for the eleventh volume there are about 807 missing. They are still coming in by degrees, and will be printed in the thirteenth volume. There will also be about the same number of female pedigrees missing. We hope that all breeders that have not as yet attended to this matter will do so at once.

At a meeting of the Executive Committee of this Association, held on the 5th of December last, the financial position was fully considered, and it was thought desirable, owing to the continued prosperity of the Association, to alleviate the cost of registration to the breeders of Shorthorns as much as possible for the future; so a resolution was passed lowering the annual fee to three dollars, commencing on the first of January, 1896, instead of four dollars as heretofore. Also, to lower the penalty fees for animals over eighteen months of age, to members twenty-five cents, and to non members fifty cents, so that after that date members will be charged one dollar, and non-members one dollar and seventy-five cents, instead of the present rates. The rates for animals under eighteen months continue as before, seventy-five cents to members, and one dollar and seventy-five cents to non-members.

A list of errors is made in each volume, which should be marked in red ink in the volume mentioned. We also hope breeders will furnish us with any catalogues of sales that may be made during the year.

Your Committee would call particular attention to the rule requiring all calves born after the 1st of January, 1889, to be recorded before they are eighteen months old. A penalty fee will be charged after that date. Attention is also called to the clause in the Constitution which requires that "a member must pay up all his fees in arrears before he can resign."

Since the last meeting we have received the XXXIX. Vol. of the American Herd Book, and the XLI Vol. of Coate's Herd Book as exchanges.

Extracts from By-laws.

Section 1.—Persons desirous of becoming members shall so notify the Secretary, pay the entrance fee, and agree, if elected, to conform to the rules of the Association, and not to withdraw without paying all fees due, and giving three months' notice of their intention of doing so.

Section 2.—Members shall pay an entrance fee of $3, and subsequently an annual subscription of $3, which annual subscription shall be due and payable on the 1st of January of each year.

New By-law.—That all calves dropped after January 1st, 1889, shall in future be registered within eighteen months of birth, and if not so registered, enlarged fees shall be charged for their registration.

Section 15—Fees.—Charges for registration will be:

To members, registration and certificate	$0 75	for each animal.
To non-members, registration and certificate	1 25	"
Over age, to members. In all cases a certificate goes with registration	1 00	"
Over age, to non-members. " " "	1 75	"

Change of ownership, 25c.; duplicate certificate, 25c.
Back volumes of Herd Books, $2 each.

Henry Wade,
Secretary.

FINANCIAL STATEMENT.

Receipts.

1895.		
Jan. 1.	Cash on hand	$2,129 19
Dec. 31.	290 yearly subscribers	1,160 00
	60 new subscribers	240 00
	Registration fees	3,222 00
	Interest	99 37
	Herd books	7 50
	Insurance received	2,500 00
		$9,358 06

Expenditure.

1895.		
Dec. 31.	By presentation and prizes	$80 00
	Rent of hall and freight	20 79
	Registration fees returned	9 75
	Printing and stationery	264 80
	Postage	276 50
	Auditor and stenographer	64 10
	Committee expenses	106 20
	Herd Books, Vol. X	1,191 98
	Herd Books, binding	272 00
	Salaries—	
	R. L. Denison	385 48
	H. J. L. Laws	600 00
	H. G. Wade	482 50
	H. Wade	499 92
	Clerks, copying	151 50
	Insurance	58 50
	Caligraph	107 50
	Cash	4,786 54
		$9,358 06

Assets and Liabilities.

1895.			1895.	
Dec. 31.	To cash	$4,786 54	Dec. 31. By balance	$10,524 04
	Office furniture, books, etc.	150 00		
	Vol. I. D.H.B., 99 copies	148 50		
	" II. " 298 "	447 00		
	" III. " 396 "	594 00		
	" IV. " 396 "	594 00		
	" V. " 391 "	586 50		
	" VI. " 391 "	586 50		
	" VII. " 363 "	544 50		
	" VIII. " 375 "	562 50		
	" IX. " 373 "	559 50		
	" X. " 643 "	964 50		
		$10,524 04		$10,524 04

I hereby certify that I have examined the books and accounts of the Dominion Shorthorn Breeders' Association for the year ending December 31st, 1895, and that the above statement is in accordance with the same.

CHAS. F. COMPLIN,
Auditor.

TORONTO, January 22nd, 1896.

The PRESIDENT: You will observe gentlemen, here, that the matter of printing is a very considerable one for the past year. We have had an enormous amount of that work to do; also there is a considerable item some people might look at, that is, $106.20 for executive committee. That, too, has been greatly enhanced by frequent visits we have made to the city in consequence of the fire, but we are in hopes these items will be greatly reduced next year. I suppose you know we have dismissed all our clerks. We have no expense at the present time, the Secretary does the work for so much money. That is a matter, perhaps, the members of the Association are not aware of; it should have, perhaps, been brought out in the Secretary's report. We have made an arrangement with Mr. Wade to do the whole work of the Association at a rate of thirty-two and a half cents per pedigree, ten cents for a duplicate certificate, and ten cents for a transfer. If you have any questions, now, with regard to the report we will be glad to answer them.

Capt. ROBSON: Have you noticed any increase in the number of registrations since this new rule came in force?

Mr. WADE: Since this new rule has come in force I have had twenty-four new members join the association; I have also recorded a great many over-age animals.

Mr. COWAN, of Galt, suggested that they change the penalty age for bulls from eighteen months to two years, and the time for heifers be unlimited.

A brief discussion took place on this, but as the majority of the members were not in favor of such a change the matter was dropped.

Moved by Mr. W. G. PETTIT, seconded by Mr. COWAN, that the minutes of the last meeting and the Secretary's report be adopted. Carried.

ELECTION OF OFFICERS.

The next order of business being the election of officers, Mr. John Snell and Mr. John Davidson were named as scrutineers by the President.

Mr. MILLER explained to the meeting that he had given a notice of motion at the last annual meeting that three Vice-Presidents should be elected, two general, and one for the Province, which was carried into effect.

Moved by Mr. COWAN, seconded by Mr. RAE, that in future the officers shall stand as President, two general Vice-Presidents, and a President from each of the Provinces as heretofore. Carried.

The election resulted as follows:

President: ARTHUR JOHNSTON, Greenwood, Ont.
First Vice-President: JAMES RUSSELL, Richmond Hill.
Second Vice-President: JOHN I. HOBSON, Mosboro'.

Vice-Presidents from Provinces:

ROBERT MILLER, Brougham, Ont.
HON. JOHN FERGUSON, M.P.P., Charlottetown, P.E.I.
J. H. LADNER, Ladner's Landing, B.C.
JAMES COCHRANE, Hillhurst, Que.
JOSIAH WOOD, M.P., Sackville, N.B.
MALCOLM MCINNES, Calgary, Alta.
O. CHASE, Church Street, N.S.
JOHN E. SMITH, Brandon, Man.

Board of Directors:

C. List.	A. List.	B. List.
D. D WILSON, Seaforth.	EDWARD JEFFS, Bondhead.	W. J. BIGGINS, Clinton.
H. WRIGHT, Guelph.	H. SMITH, Hay.	DAVID RAE, Fergus.
JOHN ISAAC, Markham.	T. E. ROBSON, Ilderton.	JAMES TOLTON, Walkerton.
W. G. PETTIT, Freeman.	F. I. PATTEN, M.D., St. George.	WILLIAM LINTON, Aurora.
C. M. SIMMONS, Ivan.	WILLIAM DAWSON, Vittoria.	JOHN DAVIDSON, Ashburn.

Executive and Finance Committee: JAMES RUSSELL, Richmond Hill; ROBERT MILLER, Brougham JOHN I. HOBSON, Mosboro'; WILLIAM LINTON, Aurora, ; ARTHUR JOHNSTON, Greenwood, President.

Delegates to Industrial Exhibition: HON. JOHN DRYDEN, Brooklin; JOHN I. HOBSON, Mosboro'.

Delegates to Western Fair: T. E. ROBSON, Ilderton; C. M. SIMMONS, Ivan.

Secretary and Editor: HENRY WADE, Toronto.

AFTERNOON SESSION.

The meeting resumed business at 1.30 p.m. with all the members present and President Johnston in the chair.

The President referred to the radical change that had taken place in the new classification in the shipment of stock, amounting to nearly four times the charge made before. The Board and he had made arrangements by which the two railway companies have been interviewed on the matter, that is, a letter had been written to them in regard to the matter, and in order to lay it before the members he asked Mr. Wade to read the letter, which they had both courteously answered.

TORONTO, February 8th, 1896.

A. WHITE, ESQ.,
Central District Freight Agent, City.

DEAR SIR,—The Board of Directors of the Shorthorn Cattle Breeders' Association propose holding a meeting at the Albion Hotel, Toronto, on Wednesday evening, the 12th instant, at 7.30 p.m., and would like very much if you could send a man from your office to meet the Board, as one of the main questions to be discussed is the change in the classification of cattle for shipment recently issued. I may say in advance, I have never known such an outcry against any action of any body with which we, as breeders and shippers of pure-bred stock, have had to do. I cannot believe for my part that the railway authorities have calculated the result of the changes made. In the first place, I may say that the breeders of this class of stock have not only not made any money during the past five years; but they have, every one of them, lost money at the business. I will be borne out by all the breeders, including Hon. John Dryden, Minister of Agriculture for Ontario.

In the second place, I wish to say that they (the breeders referred to) are not, as some think, wealthy men; but in nine cases out of ten they are men of very moderate means. In the third place, we think that we are not only doing good work for the country at large by producing, and distributing, pure-bred bulls all over the Dominion, to improve the size, quality, and value of the cattle of the country, but we are assuredly providing the country with the stock that must produce the bullocks carried by your roads to the sea-port, because if the young bulls were not distributed the farmers could

not breed steers that would pay to ship to England. I think every intelligent farmer in Canada will testify to this statement being literally true. It might be answered that the farmers who buy these young bulls, in most cases, pay the freight. Even if this is so, I have to answer that the farmers, who must need the services of these young animals, are fully as little able to stand an additional tax as the breeders who produce them, perhaps in the majority of cases they are less able to stand the tax.

I doubt whether the classification committee quite understand the full extent of the change from the old classification of cattle to the new in case of small shipments. I might, in this connection, tell you that these young bulls are useful from the age of eight to twelve months old, and I think I am within the mark when I say that fully one-half, if not three-quarters of them, have been sold and shipped while still under a year old, for several reasons. First, the breeders have been anxious to get them away as early as possible to save feed and care, in order to have less expense on them, and so be able to sell them at prices that the farmers could afford to pay; and, in the second place, because both breeders and farmers have considered even the old classification almost prohibitory after the animals were over a year old—viz., 3,000 pounds.

I am not going to deny that some animals have in the past been shipped at a less age than the real one. I may assure you that the prices now prevailing for these young animals are little, if any, more than half the prices paid even five years ago.

You will understand the difference to men like myself when I tell you that I sell yearly about thirty head of animals, mostly young ones, and heretofore the average freight per animal (I paid most of it) would be about $4.50 in Ontario to $7.50 in Quebec. At the new classification the averages would be about $16 to $25, or thereabouts, making a tax of from $325 to $400 yearly on my business, directly or indirectly—a tax I simply could not stand and keep on importing and breeding these animals

In this respect I am only one of many. It is simply crushing a business already struggling for life.

I am sorry this communication is so long, but I could not say all I wished to say in less space.

Very truly yours,

ARTHUR JOHNSTON,
President Shorthorn Breeders' Association.

Moved by Mr. HOBSON, seconded by Mr. MILLER, that, in the opinion of this meeting, we, the breeders of thoroughbred Shorthorn cattle, consider the recent change in tariff for shipment of pure-bred stock, in small lots, will make it impossible for the breeders to do business at a profit, and unless the railway authorities encourage the breeders by giving them very favorable rates for the shipment of stock it will mean inestimable loss to the farmers of Canada, and also the railroads of this country, if the breeding of high class cattle for export trade is not encouraged to the greatest possible extent. Carried.

PRESIDENT JOHNSTON called attention to the question of changing the penalty fees.

A short discussion took place at this period of the meeting as to whether the resolution as to changing the penalty fees should come in force at once or stand as a notice of motion until the next annual meeting.

Mr. WADE explained to the members that if the motion came in force at present it would cost a great deal more on account of sending out circulars to all the members informing them of such, and would make quite a confusion, and it was

Moved by W. G. PETTIT, seconded by JAS. RUSSELL, that the penalty age on animals be changed to two years instead of eighteen months, and that this stand as a notice of motion until the next annual meeting.

Mr. Richard Gibson (of Delaware), read a very interesting paper on "The Shorthorn Trade in England in 1895, and Reflections Thereon."

Moved by Mr. Hanley, seconded by Mr. W. G. Pettit, that the thanks of this meeting be tendered Mr. Gibson for his very able and instructive address. Carried unanimously.

Mr. H. J. Hill, Manager and Secretary of the Toronto Industrial Association, then addressed the members in reference to the proposal of having the exhibit of live stock on the fair grounds from Thursday morning of the first week. Mr. Hill pointed out the reasons they wished to have the cattle on the grounds the first week, saying that they had their exhibition advertised from such a date to such a date, and as a great many Americans came over during the first week they went away disappointed on account of not being able to see the live stock. Also, at the present time, as the live stock was brought in on Monday or Tuesday of the second week, the exhibitors were in such a hurry getting ready for the ring in order to have their animals judged, that they had no time to meet any buyers, and the consequence was they would probably lose a good sale, whereas if their animals were in on Thursday of the first week all this rush and hurry would be avoided, and the exhibitors would have ample time to meet any who wished to purchase. He also said their prizes were given entirely from gate receipts, and if the live stock was in earlier they could get the railways to give one cheap trip the first week, the same as they get the second; the attendance would then be larger, and in the end they would be able to increase the prize list. He also said they were always rushed at the dairy test, and it would give more time for this if the animals were in earlier.

After a short discussion as to the advisability of having the animals in earlier it was

Moved by Wm. Dawson, seconded by Robt. Miller, that, after hearing the explanation of Mr. Hill, Manager of the Industrial Exhibition, as to wanting to have the live stock on the grounds on the Thursday of the first week, this Association hereby resolves that in its opinion it will be advisable to have their cattle on exhibition from the Thursday of the first week for the reasons given, and it will also give more time to any dairy test that may be in progress. Carried.

Mr. T. E. Robson, of Ilderton, then read a paper on "How are we to Improve the Standard of our Shorthorn Herds?"

Moved by Mr. Hobson, seconded by Mr. W. J. Riggins, that a vote of thanks be tendered Mr. T. E. Robson for his excellent paper. Carried unanimously.

Mr. Robert Miller also read a valuable paper on "What is Character?"

It was also moved, seconded and carried unanimously, that Mr. Miller be tendered a vote of thanks for his excellent paper.

Canadian Cattle in the British Markets.

Mr. Miller then read the following resolution:

Moved by John I. Hobson, seconded by James Russell, "That in the opinion of this Association everything has been done that can be done both by the Government and by the press of the Dominion to regain the privileges taken from us by Great Britain, viz., the privileges of selling our cattle in their inland markets if we thought them better than the seaport towns, and of selling them to be fed longer, if not in condition for immediate slaughter.

"That we most emphatically repeat that we have no pleuro-pneumonia or contagious disease of any kind in Canada, nor have we ever had except in quarantine, when it was immediately stamped out, and every possibility of infection destroyed.

"That it is not fear of disease that makes the farmers of Great Britain object to our cattle, but the fear of competition; the former might be removed, but the latter never can.

"Therefore, having lost the British market, we believe completely, for our store cattle, we would respectfully urge upon the Government at Ottawa the desirability of removing all quarantine restrictions on our side between Canada and the United States, and of asking the United States to allow our cattle to pass into their country without quarantine.

"No disease having ever found a foothold in Canada, and none having been found in the cattle of the United States for several years, there can no longer be any necessity for any hindrances being placed in the way of the freest traffic in pure-bred cattle.

"It has been acknowledged by all breeders and has hitherto been a principle of all Governments, that the improvement of live stock needed not only all the scope, but all the encouragement possible to give the industry.

"We have suffered for want of that scope for some years in order to go on with the improvement of the different breeds. We need the privilege of going into any herd in America or Great Britain, and buying the animal whose form and breeding suits our needs, no matter where it may be found.

"While there was a possibility of regaining what was a doubtful advantage at best, viz., the shipping of our store cattle to Britain, we held aloof from asking anything that would prejudice the case, but now when we are convinced that all chances in that direction are gone we humbly ask that we may be allowed every assistance to regain the trade that was profitable to us and beneficial to the country."

Mr. MILLER: I have said before I concur in every word of it, and if I thought there would be any doubt as to its passing I would speak to it and give you my reasons why we should urge upon the Government of our country to make arrangements with the Government of the United States to carry out these views.

Without any further remarks the resolution was put to the meeting and carried unanimously.

The meeting adjourned at 4.30 p.m.

"WHAT IS CHARACTER?"

By ROBERT MILLER, BROUGHAM, ONT.

The term "character," used in various ways when applied to Shorthorns, is one the meaning of which many people have but a vague idea. We have heard judges when asked their reasons for giving one animal preference to another, answer with a wise look that it was because of the great amount of character displayed by the one in comparison with the other. The enquirer being awed by the look and the ambiguity of the term, if a simple man with no great pretentions as to judgment, usually subsides at once with a look of sorrow for himself because he had not noticed the great difference; or perhaps with a look of admiration for the man with such wisdom and superior judgment. We have also heard the term used to cover the indifferent qualities of an animal offered for sale and intended to check the criticism of the would-be purchaser.

The term when used in either of the above ways is being abused, for it has a useful meaning, and to the practiced eye is the first consideration in an animal. It means breed type, in head, horns, carriage, color, hair and general outline, or in other words, the judgment of the eye. While each of the points of an animal's make-up must always be of great importance, no one of them, or two or three combined can be of such importance as character, because they cannot make a good animal without an even balancing of the whole. Constitution is an important factor in an animal, but what use would a good constitution be in a bad animal. A good head or good back with well covered loin are both valuable points, but fail utterly in making a good animal unless other points agree with them. The first impression destroys all chances of selling if it be unfavorable, and assists very much in making a sale if favorable, so that minor points are lost in the demand for a well balanced whole, which must be present to satisfy the eye in order that a detailed examination be proceeded with. Too often style is called character, and style of the gaudy kind, such as a high head, rather long legs, with ribs inclining to be short. This may have been very nearly the meaning of the term twenty-five years ago, but it is now counted among the exploded fallacies, and left with the craze for fancy line breeding to be buried with the past. Style is a term scarcely used now, because it is a very misleading one and cannot properly be applied to an animal of the most approved present day type.

"Character" applied to Shorthorns means type of the most valuable, vigorous, early-maturing, smooth and uniform kind; it is the first quality to be desired by the breeder who wishes to be successful, and must be the constant watchword of all breeders who aim to keep in the forefront with those who are making such rapid strides towards perfecting the greatest breed of cattle that the world has so far produced.

Shorthorns, though scattered throughout the whole civilized world, though subjected to all imaginable kinds of treatment in the hands of all classes of men and in all climates, still retain their proud position of being the aristocratic cattle whose rich and hot blood overcomes all obstacles in their great pioneering work, which may be almost likened to the work of the British Empire in pushing the broad lights of Christianity and civilization into the darkest regions of the earth.

HOW ARE WE TO IMPROVE THE STANDARD OF OUR SHORTHORN HERDS?

By T. E. Robson, Ilderton, Ont.

This is a matter of interest to those who follow the vocation of one of the most important branches of agricultural industry, namely the breeding of live stock. All, I am sure, will acknowledge the charm there is in breeding domesticated animals. It draws man's mind away from the cares of life to a contemplation of natural laws and those who follow it successfully will find there is room to exercise the highest faculties. In order to arrive at our conclusion we might draw some useful lessons from past experience and observation. We remember the great boom in some of the Bates families a few years ago, and the fabulous prices that were paid for some of them because their pedigrees composed a certain line of breeding that was considered fashionable at that time. And many in those days were purchased without having been seen, the standard of individual merit being entirely disregarded. Then there was a fancy for colors, which excluded every color but red, and encouraged the use of inferior animals just to obtain a fashionable color thus confining breeders to a more limited portion of the breed We cannot afford to have anything to do with fads and fallacies. Fancies rarely go deep, though they may seem to flourish for a time. They are like the breezes which ruffle the surface of the sea but do not disturb the great body of water which sleeps in the depth unstirred by the commotion.

We all like to see good colors, and a good pedigree is absolutely essential, one that shows a series of good individuals recorded one after the other, each pair in turn producing an excellent offspring, ending at last in such a meritorious animal as to be a champion at a "Columbian" or world's competition. We would expect such an animal to produce excellent descendants. This gives what we might call a grand natural pedigree. If you study the records of the great shows you will see how the great prize winning bulls send prize winning calves—and grand calves—as representatives to the show ring. Trace the prize winners of the present time and you will find their breeding is filled with many a prize ring record.

I take it that every breeder has an ideal animal he wishes to breed up to. We will say he has a number of good females carefully selected; then the selection of the sire is of the highest importance. He should purchase none but the best for the purpose intended. One strong in those points that are weak in the females of the herd, with good quality of hair, skin and flesh, a good disposition, and particularly good individuality so that he will impress his own excellence upon his get.

For an argument one might suppose two men had each a herd of good shorthorn cows. One man uses the best sire to be found and the other a cheap ordinary animal. For a period of three generations, what would be the result? One would have prospered, and

the other would have had a bitter experience. I feel very strongly, and would like to impress upon, not only shorthorn breeders, but breeders of all other stock, the advantages derived from breeding from good sires. The other course is a great loss to the country at large.

The shorthorns as beef producers have no superiors, and many of the families are excellent milkers. I read an article in the last number of the *Breeders' Gazette* stating that Greene Bro's. great show cow, "Roulette", gave 627 pounds of milk in seven days which made 19⅝ pounds of good butter, and she weighed 2,000 pounds. If correct, this is a wonderful record, and speaking from experience in my own herd I can say that the four cows which I consider my best are the best milkers as well. Let us not neglect the milking as well as the beefing qualities of our shorthorns.

I wish to say a word or two in reference to the importation of cattle from the motherland. Our Government has placed a restriction on that trade by causing each animal to have the tuberculin test applied while in quarantine, which will undoubtedly have the effect of stopping to a great extent the importation of cattle into this country, which operation is considered by many of our best breeders as well as several scientific authorities to alarm unduly and possibly to provoke the trouble sought to be discovered.

Too much praise cannot be given our breeders who have had the courage and enterprise in the past to go to the old world and select from the best British herds and bring to our shores the material from which have "by skill and spirit in breeding" descended the animals that have made Canadian Shorthorns so famed, and should the importation be discontinued I feel sure that by careful manipulation of our present resources, we can retain and even improve upon the high standing of our herds without introducing new blood for some years to come.

It cannot but be evident that the standard of many herds especially among the smaller breeders, have lost some of their Durham character, by breeding from any and every animal that happened to claim a registerable pedigree. Would it not be wise to adopt what many of our dairy stock breeders are practicing, that of retaining only those that come up to a certain standard. Every year there are vastly too many bulls kept and sold for service that should have come under the operation of the surgeon's knife. To impose upon an unwary breeder a fattened inferior bull to sire his future stock, is not only short sighted when viewed from his personal standpoint, as a future seller of stock, but is extremely suicidal to the best interests of the breed.

The selection of females to be retained in the herd as future matrons is worthy of more consideration than is usually given. Here too, the mistake of breeding everything that can be got in calf is to much practised for our herds' best interest. By giving our best endeavors to the increase of quality rather than quantity we serve our own pockets as well as the highest interest of our industry. Inferior shorthorns, male or female, rarely bring for breeding purposes more money than if disposed of for the block. By thus disposing of the unworthy animals the standard of our herds would be materially raised.

A great breeder of dogs being asked to account for the excellence of his kennel and the manner of his success as a prize winner, replied that he hung about 40 per cent. of the puppies. Should we not follow this same principle, at least to a certain degree.

In conclusion I may say that I have simply touched upon some of the salient features as they impressed themselves upon my mind with the object of bringing out rather than to exhaust discussion upon a subject that appears to me to be of the greatest moment to one of the most important of Canadian industries, the breeding of shorthorn cattle.

SHORTHORN TRADE IN ENGLAND IN 1895 AND REFLECTIONS THEREON.

By Richard Gibson, Delaware, Ont.

The shorthorn interest in England is seldom allowed to lag, for as soon as the Christmas fat stock shows are over the spring bull sales commence. At Penrith, February 28th, sixty-nine were sold for an average of $126 apiece; Birmingham followed, March 6th to 8th. There were 365 entries, including cows and heifers, and all passed through the auctioneer's ring; 205 bulls were sold at an average of $163 each, not including the prize money. With that W. Atkinson averaged $1,010, Earl Stanhope $360, J. Deane Willis $340, J. W. Barnes $300, etc. It may be a matter of interest for some to know the system upon which these sales are conducted. There is a class for bulls exceeding 30 months, another exceeding 21 months and not exceeding 30, and so on from 10 to 21, from 15 to 21, from 12 to 15, and from 9 to 15 months.

Three prizes are given in the three first classes, and six in the three latter; the first prizes run from $100 to $250. There is an upset price in each class, ranging from $100 to $250, so that an exhibitor is not obliged to sacrifice his stock.

But you ask, "Who buys these bulls?" Ninety per cent. are bought by tenant farmers for steer getting. We may ask, "Can these tenants afford to pay such prices for that purpose?" The reply is, they cannot possibly afford to use a poor bull, because he can be bought at a low price, I won't say cheap, for the ill-gotten, ill fed, low-priced brute is dear at any price. They know, if our steer breeders have not found it out yet, that the only salvation for them is to breed nothing but the best. The world at large, the American and Australian continents, will supply the cheap meats for the million. But to compete with these at all it behooves them (the tenants) to put a superior article upon the market, to do which they recognize the value of good bulls, and Englishmen care little whence an article comes, provided it pleases their palates. If Patagonia produced better beef than could be found in England they would import it, and even if it came from Timbuctoo, that would make no difference.

We have got to do away with this idea that it is all a matter of prejudice on the part of the Englishman. When we take the same methods to produce the results that he does, then we may cry "Prejudice," but don't let us hug ourselves with the delusion that, with our rough-shod system and cheap bulls, we are on the right road to produce superior steers Good bulls have been going a-begging for the last year or two here, with the result that the breeding industry has become paralyzed. The Government purpose organizing what is called a "dead meat" trade. Where are our steers to come from continuously that will do us credit? The first step will be by using better bulls. How can the Canadian farmer expect to raise steers got by bulls for which he grudges $50 to $60, to compete with the English farmer, who does not hesitate to pay four or five times that sum? Don't let our people try to economize at that end of the steer, and when the calf arrives don't economize in the manger, but feed from start to finish, and plenty of money can be made even in these times. As an illustration, a neighbor the other day sold a steer 14 months old, weighing 1,100 lbs., at 5 cents, realizing the nice sum of $55. But, as Stafford used to say, "He was well got and well descended."

The next feature to which I would draw your attention is the attitude of South American buyers in the English market, not only to the quantities they have taken, but to the quality of their purchases. Also, nothing has been too good for them or prices too high. For instance, the purchase of Sir Lionel Studley, a Booth bull for $3,500; and wherever they could hear of or see an extra good animal, the agents of the breeders in Buenos Ayres or the Argentine were after him. The very best of English, Scottish or Irish that could be bought have been expatriated; price has not stood in the way, providing the animal was good enough.

The numbers exported have been enormous. In connection with this trade two questions suggest themselves. The first is: Are there no means of reaching this market by our breeders? Upon this there might be a discussion. The second is: For what purpose are these bulls imported. It is, in the main, to breed steers for England. No people or nation of stock breeders realize the value of good males as much as they do. With a poor quality of foundation stock, they have learned that no bull is too good to cross on these native cattle if they want the English market. What a lesson to ourselves! And if they outstrip us in the race, who must we blame? Of the principal auction sales in 1895, I note those of C. W. Brierly, mixed breeding on a Bates foundation: 42 head averaged $160; Chas. Haltes & Son, nearly pure Bates, 48 averaged $205; Darcy E. Taylor, high bred Bates, 26 averaged $161; Philo L. Milts, Bates, Cruickshank top, 43 averaged 150; the celebrated Warlaby herd of pure Booth, 48 head averaged $675; R. Thompson, Booth on Bates, 86 averaged $225; Earl Feversham, mostly Bates, 54 averaged $155. At the Scottish sale of bulls the Collynie 24 averaged nearly $400; Upper Mill, 23 averaged $210. Total sold at public auction, 15 and 30 lots, averaged $136. This is breeding herds, excluding the bull sales.

Another remarkable feature has been the success of Shorthorns at the various fat stock shows, as well as at the English dairy tests.

1895 will probably be known as the heifers' year. As at Birmingham and Smithfield in England, at Guelph in Canada, and (tell it not in Gath) at the American Live Stock Show at Madison Square Gardens, New York, a heifer won the championship, and each was a Shorthorn

Frederica, owned by Her Majesty the Queen, won $3,375 in cups and money at the two former shows, while I believe this is the first occasion upon which one of the other persuasion has been honored with the championship at a United States fat stock show.

In conclusion, let me echo the sentiment, "Long may Her Majesty reign to win prizes and lend dignity to our profession," and may our wealthy men follow such an example. It is an honor to us to have her enrolled in our ranks, such an honor as she confers upon no other calling or profession. Then let us duly appreciate her interest in it by striving to produce something to be mentioned as the equal of Frederica.

THE DOMINION AYRSHIRE BREEDERS' ASSOCIATION.

ANNUAL MEETING.

The ninth annual meeting convened in the Albion Hotel, Toronto, at 2 o'clock on Friday the 14th of February, 1896, with President, W. W. Ballantyne, of Stratford, in the chair. Members present: Jas. McCormack, Rockton; H. E. Eyre, Harlem; Joseph Yuill, Carleton Place; John Crosby, Campbellford; William Stewart, Jr, Menie; John Weld, London; J. S. Spencer, London; John Jackson, Meadowvale; William Baldock, Mount Charles; W. Green, Toronto; J. E. Brethour, Burford; and H. Wade, Secretary, Toronto.

The President's Address.

Gentlemen,—It affords me great pleasure to welcome you to our annual meeting. I regret very much that more do not attend our yearly gatherings, not only to transact the necessary business but to exchange ideas and suggest means and ways of bettering the condition of our favorite breed. Let us come and do something, not merely to elect officers.

I wish to refer to a few changes made during the year. As most of you are aware, the Agriculture and Arts Association was abolished by an Act of Parliament at the last Session of the Legislature, to come into force December 31st, 1895. That being the case, some different plan had to be entered into, so that our Association could carry on the work of registration of pedigrees. Accordingly, our Association was asked by the Minister of Agriculture to appoint two delegates to meet him, along with delegates from the other breeders' associations. Mr. McCormack and I were elected to meet Mr. Dryden, who outlined a proposition to carry on the work of registration, in which we agreed, provided arrangements could be made with the Superintendent of Registration. We met Mr. Wade, who was appointed to that office, and an agreement was reached, by which he was to do all the work and get the pedigrees ready for the printers at 35c per pedigree, ten cents for transfer and ten cents for duplicate certificates, the remainder of the amount charged by the Association to go to its funds. You see by this change we pay him no stated salary, the Government doing that and also furnishing offices free.

As I happened to be a delegate to the Industrial Exhibition at Toronto last year, I would like to refer to a few matters concerning it, as a number of changes were made in the prize list, which seem to have not in some cases met with unanimous approval. I feel that we should when assembled here discuss changes that are desirable to be made, and instruct the delegates who may be chosen to represent this Association at the different Fair Boards this season as to what changes we wish to be made. I shall now mention a few of the changes made, and trust that you will discuss them and others that may be brought up.

(1) In the rules and regulations the calculation of the ages of all dairy cattle was changed from the 1st of September to August 1st. This will be obvious to all those who have been showing, as cows to be shown in proper shape the beginning of September should calve in August and this rule allows the calf thus born to be shown as a calf the following year, being too young to show as a yearling.

(2) Cows in dairy classes to be milked dry not earlier than five o'clock the morning of the day they are to be judged. I feel this rule should not apply when the judging commences in the morning, but when the judging does not begin until the afternoon, it is simply ruination to a new calved cow to not have her milked in the morning.

In the prize list we secured an addition of about $160, apportioning it to a 4th prize in each section, also adding a section for heifer calves under six months old. I hope the

same will be secured for bulls under six months. If money is not granted I would like to hear the feeling of the meeting in cutting down other sections so as to make one for them, but I really do not see how the committee can refuse us more money, when you compare the showing made at the last Fair by the Ayrshires and Shorthorns, and the amount of money offered in these two classes. In comparing numbers we should get almost double the money.

"Cow and two of her progeny" was changed to "bull and four of his get." This I consider a change in the right direction. Of course, objections can be raised, and have been, in having to show the sire, but we felt that it was a means to encourage breeders to retain a good sire in the herd, a very important point when you find out you have such an animal. However, I think it would be fairer to all breeders to leave out the bull.

Instead of "Four Calves bred and owned by the exhibitor," I should like to see it changed to "Young herd consisting of one bull and four females under two years old, the latter to be bred and owned by exhibitor."

Delegates will be appointed to the various fair board, and I think it is not fair that they should go and ask changes which may be for their own special benefit (I do not say that such has been the case), but let them go clothed with instructions from this Association to ask for certain changes that every member has had a chance to have his say upon.

Another matter, and I feel a good deal of diffidence in saying anything about it, is: Why should we have an Appendix in our Herd Book? I claim that cattle registered in it are of no more value than a good grade dairy cow, and it is doing incalculable injury to the Ayrshire breed as a whole. A man may sell them to an unsuspecting purchaser as pure-bred, but is it going to do any good when the purchaser finds out what he has, to himself or his neighbor breeder? Of course it would seem a great hardship to many, but would it not in the end be beneficial to the owner and the Ayrshire as a breed? I feel quite strongly on this point, and would ask you to discuss it thoroughly.

Without saying much about it I would simply ask before sitting down, Is there any possibility of us amalgamating our two Ayrshire Associations, or, rather, our two Ayrshire Herd Books in Canada?

A short discussion took place after Mr. Ballantyne had delivered his address as to doing away with the Appendix in the Ayrshire Herd Book, but it was decided to let it stay as it is at present.

Secretary Wade then read his Annual report and the minutes of the last meeting.

THE NINTH ANNUAL REPORT OF THE EXECUTIVE COMMITTEE OF THE DOMINION AYRSHIRE BREEDERS' ASSOCIATION.

Registrations.

We have recorded during the last year 549 animals, and have 881 recorded ready for the third volume. The registrations per year are gradually increasing.

Members.

Fifty-six members have paid their fees for 1895, and the new ones have all had the second volume sent to them.

Exhibitions.

At the exhibitions the Ayrshires have been well brought out. At Toronto, Montreal, Ottawa, London and the Dairy Show at Gananoque magnificent displays were shown and great interest was taken in them by the public.

Office Work.

No doubt you are aware that the Agriculture and Arts Association has gone the way of all flesh after fifty years of an honorable and successful existence, and the regis-

tration work commenced by them, and carried on so successfully by them, will in future be partially assumed by the Ontario Government. They have already appointed me registrar of live stock to see that the registrations are made for the different associations, but each live stock association now assumes the absolute control of its own work, receiving the fees for registration, as well as the members' fees. They had the control of the standard before; in addition to this they will have the benefit of the two hundred volumes of No. 2 that were printed by the Agriculture and Arts Association after the fire. A great many pedigrees were destroyed at that time, some of which have been returned to copy. There are still several that have not been returned, and we would be very thankful if the breeders would return them in time for the next volume.

A special meeting of the directors of this Association was held on the 29th of June last to take into consideration a letter from the Minister of Agriculture, asking that two delegates be appointed to attend a meeting to be called by him during the Industrial Exhibition. At that meeting the President, W. W. Ballantyne, and Jas. McCormack were appointed, and at the meeting called by the Hon Mr. Dryden the scheme for future registrations and conduct of the affairs of the Association as promulgated was unanimously adopted, as mentioned before. Also a special grant of $25 was granted to the Gananoque Dairy Show—a special sweepstake premium for best Ayrshire cow on the ground.

At the Fat Stock Show held in December last these two delegates and Mr. William Stewart, jr., one of your directors, consented to the following agreement.

We, the undersigned delegates from the Ayrshire Breeders' Association, appointed for this purpose, hereby agree to pay Mr. Wade, the Superintendent of Live Stock Registrations, the sum of thirty-five cents per pedigree and ten cents per transfer and ten cents for duplicate certificates, he to record the animals, issue certificates and correct proof for the printer.

(Signed) { W. W. Ballantyne, Jas. McCormack.

Financial Report for 1895.

Receipts.

1895, Jan. 1st,	To cash on hand	$7 34
" "	To 56 members' fees	168 00
Total		$175 34

Expenditures.

1895, Feby. 7th,	By stenographer	$6 50
"	Oct. By 21 vols. Herd Book	27 31
"	Oct. By special premium, Gananoque	25 00
"	Dec. 31st, Cash, salary to Secretary less stenographer	43 50
Balance on hand		73 03
Total		$175 34

Moved by H. E. Eyre, seconded by Jas. McCormack, That the minutes as read and the report be adopted. Carried unanimously.

The Secretary then read a communication from Mr. A. Johnston, President of the Shorthorn Breeders' Association, which he had sent a copy of to the Grand Trunk and C. P. Railway companies, and asked for it to be read at the Dominion Ayrshire Breeders' meeting to know if it would meet the approval of the members.

After the reading of the letter the following resolution was passed:

Moved by John Crosby, seconded by Jas. McCormack, That in the opinion of this meeting we, the breeders of Ayrshire cattle, think the late change by the railway authorities in the tariff rate for shipping cattle in small lots, will make it impossible for breeders of pure-bred stock to do business at a profit, unless the railway authorities encourage the breeders by giving them very favorable rates for the shipment of stock. It will mean a disastrous loss to the farmers and breeders of Canada as well as a severe loss in the near future to the railways themselves if the breeding of high class cattle for the export trade is not encouraged to the greatest possible extent.

Moved by H. E Eyre seconded by Joseph Yuill, That this Association believes that everything has been done that can be done to have the embargo removed from our cattle trade in Great Britain and without success; therefore, we beg to urge upon the Dominion Government the very great necessity of having all restrictions removed on the Canadian side and asking the United States Government to remove quarantine now enforced against Canadian cattle, we being fully confident that no danger from contagious disease exists in the mixing of our cattle, and that great impetus would be given to the business of breeding pure-bred cattle by such action. Carried.

Mr. Hill, Manager of the Industrial Exhibition, was introduced to the members present at this point of the meeting, and, on rising, asked them to agree to a resolution which had already been passed by several live stock associations, to have their cattle on the grounds Thursday morning of the first week instead of Monday of the second.

Moved by Mr. McCormick, seconded by Mr. Crosby, that, after hearing the explanation of Mr. Hill, Manager of the Industrial Exhibition, as to wanting to have the live stock on the grounds on Thursday of the first week, we hereby resolve that it will be advisable to have the cattle on exhibition from the Thursday of the first week for the reasons given, and it will also give more time to any dairy test that may be in progress. Carried.

Election of Officers

The election of officers resulted as follows :

President : H. G. Eyre, Harlem, Ont.

Vice-President for Ontario : John Crosby, Campbellford.

Vice-President for Quebec : W. C. Edwards, M.P., North Nation Mills.

Vice-President for Manitoba : George Steele, Glenboro', Man.

Vice-President for North-West Territories : Claude H. Manners, Moosomin, N.W.T.

Vice-President for British Columbia : W. Wells, Chilliwack, B. C.

Vice-President for Nova Scotia : C. A. Archibald, Truro, N. S.

Vice-President for Prince Edward Island : C. C. Gardiner, P. E. I.

Directors : Wm. Stewart, Menie ; Jas. McCormack, Rockton ; Jos. Yuill, Carleton Place ; Thos. Guy, Oshawa ; W. M. Smith, Fairfield Plains ; R. G. Steacy, Lyn ; A. Kains, Byron ; W. Nichols, Plattsville ; W. W. Ballantyne, Stratford.

Delegates to Industrial Exhibition : Jas. McCormack and W. W. Ballantyne.

Delegates to Western Fair : M. Ballantyne and A. Kains.

Delegates to Ottawa Exhibition : Jos. Yuill and J. C. Smith.

Auditors : John Weld and W. Green.

Judges : M. Ballantyne, St. Marys ; H. G. Clark, A. Kains, Byron ; James McCormack, Rockton ; H. E. Eyre, Harlem ; Wm. Stewart, Menie ; John Crosby, Campbellford ; Wm. Hunter, Lancaster ; W. M. Smith, R. G. Steacy, Thos. White, Branchton ; Alex. Hume, Burnbrae ; John Douglas, Warkworth ; W. Hyslop, Smith's Falls.

Moved by Mr. McCormack, seconded by Mr. Stewart, that a vote of thanks be tendered to Mr. W. W. Ballantyne, the retiring President, for the able and efficient manner in which he has performed his duties during the past year. Carried unanimously.

Mr. Ballantyne thanked them for the honor they had done him in moving the vote of thanks.

Mr. W. W. Ballantyne then took up clause "(1)" of his address, *re* the ages of cattle, and moved, that the delegates be instructed to calculate the age from the first of August, and the calves under six months from the first of February. Seconded by John Crosby and carried.

Moved by W. W. Ballantyne, seconded by Joseph Yuill, that the clause where it says "bull and four of his get" be changed to four animals the get of one sire. Carried.

Moved by Mr. Ballantyne, seconded by Jas. McCormack, that a new class be added in the prize list for bull calves under six months. Carried.

Moved by Jos. Yuill, seconded by Wm Stewart, that prizes be given for heifers two years old; heifer one year old; heifer calf under twelve months; heifer calf under six months and bull under two years old; heifers to be bred by exhibitor. Carried.

THE AYRSHIRE THE BEST COW FOR THE CANADIAN FARMER.

By Joseph Yuill, Carleton Place, Ont.

It is not my intention at this time to enter into a description of the origin and early history of this valuable breed of cattle. It matters very little to us whether they are an original breed or the result of judicious crossing, as long as they fill the requirements. We have eleven different breeds of cattle in Canada. Each one of them fills a place that no other animal can do. And the reason why so many people fail in breeding cattle is because they apply them to a purpose that nature never intended them for. What we claim for the Ayrshire cow is, that she is the farmer's cow. And I think I will be able to show you that there is no cow in Canada so well suited to fill the requirements of the Canadian farmer as the Ayrshire cow. The Ayrshire is a very healthy, hardy, active breed of cattle, able to make a good living on bare pasture when some other breeds of cattle would starve. They are remarkably adapted for cheese factory purposes, giving a large flow of good, rich milk, and in most cases milking most of the year. And as butter makers they cannot be excelled. It might be possible to make more butter from a given quantity of milk from some of the other breeds, but there is no cow that will make as much good butter for the amount of food consumed, especially with grass feed, as the Ayrshire cow.

There are five points especially necessary in a good dairy cow, no matter what breed she is of. 1st, a large udder of elastic quality; 2nd, a soft mellow movable skin; 3rd, long, broad rumps and thin hips; 4th, a large, roomy barrel; 5th, a fine tapering neck with clean cut face, carrying large, prominent eyes. It might be possible to beat her at a test, for that is not what nature intended her for. During the time of a test cows are always stall fed, while as a rule the Ayrshire in Canada is allowed and expected to forage for a living. And if the tests are conducted in that way, that is, if the competing cows were turned into a pasture field and fed nothing except the grass they gathered the Ayrshire would be ahead every time, for, to use the American term, she is a hustler.

Although the Ayrshire cow, while shut up in a stall and hand fed, is not occupying the position nature has laid out for her, yet the owners of Ayrshires have no reason to be ashamed of their favorite breed of cattle. In the last fourteen years the Ayrshire cow has taken more prizes when in competition with other breeds than all the other breeds of cattle in Canada put together. In the year 1882, W. Weld, of the *Farmers' Advocate*, offered a prize of $100 for the best five cows for general purpose and profit at the Provincial Exhibition held at Kingston. This prize was awarded to five Ayrshire cows owned by Thos. Guy, of Oshawa. And in the same year an Ayrshire cow owned by the same gentleman took first place at the Toronto Industrial. In 1884, at the Toronto Industrial, the first prize in the milk test was awarded to an Ayrshire cow, also owned by Mr. Guy. And in the same year at the Provincial held at Ottawa an Ayrshire cow, owned by Jas. Drummond, of Montreal, took first for the best cow having calved previous to the 1st of May. And an Ayrshire cow owned by the same gentleman took first for the best cow having calved after the 1st of May. And an Ayrshire cow, owned by Jas. Callander, of North Gower, took second prize, being only one point behind the first prize cow.

In the year 1886, at the Dominion Exhibition held at Sherbrooke, Quebec, three prizes were ofiered, and all three were captured by Ayrshires, first, owned by Thos. Brown; 2nd, by Jas. Drummond, and 3rd by Thos. Irving, all of Montreal. And in the year 1887, at the grand Dominion Jubilee Exhibition held at Ottawa, the sweepstake for the best milch cow of any breed was awarded to an Ayrshire cow owned by your humble servant, twenty-three cows of different breeds competing. And in 1891 the *Farmers' Advocate* offered a silver tea set valued at $65 for the three best cows, any breed. This prize was taken by three Ayrshire cows owned by D. Morton & Sons, of Hamilton.

In the year 1892 the Great Western Fair offered a prize of $50 for the best milch cow. This pirze was awarded to an Ayrshire cow owned by Mr. Ballantyne, of St. Mary's. In the year 1891 the Sherbrooke Exhibition offered three prizes, for the best four cows, all three prizes were taken by Ayrshire cows owned by Mr. R. Robertson, of Howick. At the same exhibition a prize was offered for the single cow, that would do the best in one day, that was taken by an Ayrshire cow owned by a gentleman in Montreal, which makes 17 prizes taken by Ayrshires since the year 1882.

In the summer of 1884 Prof. Brown, of the O. A. C., conducted a test of dairy cows. He commenced his test with eleven different breeds, but before he concluded he had discarded all, except three, namely, Ayrshire, Jersey and Holstein. For weight of milk the Holstein took the lead, and the Ayrshire next. For quality, the Jersey was first and the Ayrshire next. But when it came to quality and quantity combined the Ayrshire was ahead. And to make it still plainer so that anyone could understand it, he showed the value of the different cows' milk, for a certain length of time. While the Ayrshire cow gives 6,000 lbs of milk. the Jersey gave 5,000 and the Holstein 7,000, and the Ayrshire's milk was worth $47, the Jersey's worth $46, while the Holstein's was only worth $22.

A few years ago the State of New Hampshire was anxious to find out which was the most profitable breed of dairy cattle, so the Professor in charge of their experimental station wrote to the different breeders' Association, and procured three cows of different breeds viz: Ayrshire, Holstein, Jersey and Durham. They were tested carefully for twelve months with the result that the Ayrshire had made 100 lbs of butter with $3 less feed than the Jersey, and $4.50 less than the Durham and $5.50 less than the Holstein.

There is another characteristic in the Ayrshire well worthy the consideration of the Canadian farmer—their superiority over all other breeds for crossing purposes. There is no breed makes so much improvement as our grades or native cattle with the grade native female. I once heard an old Irishman say, who had considerable experience along this line, that there was no cow as good as the good old common cow crossed with the Ayrshire bull, and the more crosses in her the better.

I would like to ask the members present how they were satisfied with the rules which governed the milk test at the Dairy Show held at Gananoque last fall. For my part I am not at all satisfied with them. I think these rules are simply offering a royalty for the cow that is capable of putting the most water in her milk. The rules were one point for each pound of milk, twenty points for each pound of butter fat, four points for each pound of other solids, one point out each ten days in milk, ten points deducted from the total score for each per cent of fat below three per cent.

Now if the butter fat and other solids are taken out of the milk there is nothing left but water, and I cannot see what is the sense of allowing a cow one point for each pound of water she has in her milk.

In conclusion let me say that the demand for Ayrshires has been very good during the past year, no boom, but a steady demand, in which supply and demand regulated the price which was very satisfactory.

DESCRIPTION OF AYRSHIRE POINTS.

By W. Stewart, Jr., Menie, Ont.

In judging cattle of any description reference must be had to the characteristics of their breed. Thus, while all cattle are judged by certain undeviating standards as respects feeding and growth, beef cattle must be judged from a beef-making standard, and dairy cattle from their milk-producing powers. It is more than probable that weight for weight, the Ayrshire cow being of medium size will produce more milk than any any other breed. In selection no surer test can be had than a careful study of her points.

Usefulness. The usefulness of the dairy cow in in her udder, and towards the udder, its shape and its yield, all the capabilities of the cow should be directed. We must first look upon it as a reservoir for the milk. As such it must be large and capacious, with broad foundation, extending well behind and forward, with distinct detachments, broad and square ; viewed from behind, the sole broad and level, the lobes even-sized, the teats evenly distributed, the whole udder firmly attached, with skin loose and elastic. Such a form gives great space for the secreted milk and for the lodgment of the glands, while allowing for the changes from an empty to a full vessel. The glands should be free from lumps of fat and muscle and be well set up in the body when the cow is dry, and loosely covered with a soft and elastic skin, without trace of flabbiness. Such a covering allows for expansion when the animal is in milk, while the glands are kept in proximity to the blood vessels that supply them. The necessities of the lacteal glands are larger supplies of blood from which milk can be secreted, and this harmonizes with the demands of the udder, as a store house ; for broad attachments mean a broad belly or abundance of space for the digestive organs from which all nutriment must originate. The blood is furnished to the glands of the udder by large and numerous arteries. As secretion depends on the freedom of supply of blood to the part and a copious flow, we find branches coming from different arterial trunks and freely communicative with each other, although their arteries are internal and out of sight. Yet, fortunately, the veins which carry the blood from the udder pass along the surface and by their size and other characteristics indicate the quantity of blood, not only which they carry away, but which must have passed through the glands from the arteries. These return veins pass both backward and forward, those passing forward are known as the milk veins and the size of these superficial veins on either size of the belly, and the size of the orifices into which they disappear are excellent points to determine the milking possibilities of the cow. Still better is it to find in addition veins in the perineum which also return from the udder, prominent and circuitous.

Escutcheon. The escutcheon is now generally conceded to be a good indication of milk in the cow ; this mark is sufficiently well known not to require description in detail. I think a broad escutcheon is fully as good a sign as a long one, that quantity or quality means more than shape. I would not, however, discard the shape entirely. One error must, however, be avoided. It may be well to compare the size of the escutcheon of cows of one breed, but never to compare the size of the escutcheon of cows of different breeds. I think this point means more in relation to its size in the Ayrshire than in the Holstein, and am certain that while it may be safe to follow it in the Ayrshire, in the majority of instances it would be equally unsafe to adopt it in selecting a Shorthorn, for the obvious reason that that breed has been bred for generations for other purposes than those of the dairy. The udder and its dependencies, the milk veins and the escutcheon may be considered the foundation of the Ayrshire cow. These points are important, and also the shape of the body and the form of the animal. The milk vessel is placed in the public region of the cow, and is protected on either side by the hind limbs. The breadth of its attachments secures breadth of body, and the weight requires also a depth of quarter and of flanks, the breadth below requires breadth of hip above, and the length of loin here appears related to the length of the pelvis So much for the physical portion. The physical function of milk producing demands a great and continuous, flow of

blood, so to speak This flow depends on the supply of food and the facilities of digestion. To gain this a large body is required in order to hold the suitable digestive organs. To gain further room for these we desire to see arched ribs, depth, yet no heaviness of flank, and breadth of hips, which we see was also required for the broad udder. To sustain this a strong, firm back is needed to gain the most of our blood after it has absorbed the chyle from the digestive organs. Reasons show that it should find its way freely and speedily through the system on its labors of supply and removal, cleanse itself in the lungs and again pass on to its duties. All this points to a healthy heart not cramped, and lungs of sufficient capacity, for the yield of milk drains much nutriment from the system and the constitution must needs have the vigor given by a healthy and active heart and lungs, in this way the chest is correlated with the udder. The reproductive functions require hock bones of good size, and a broad pelvis is desirable, as underlying within are the generative organs, and any defects here are to be shunned. Thus the necessities of the body of a good milking cow require the wedge shape, and this not only from the flanks but also when viewed from above.

AYRSHIRE MATTERS.

By H. E. Eyre, Harlem, Ont.

The kindness with which you received a paper of mine in 1892 has induced me to offer you again a few thoughts on Ayrshire matters. I will premise my observations with an earnest request that the ideas I advance may be thoroughly discussed and frankly criticized by this meeting. Were it necessary for me to give an excuse for presenting another paper to this association, I would give an excuse similar to the one given by the the late Sir John A. Macdonald for keeping the N P. alive so long. "I ought." said the veteran statesman, "to do something for the N.P., it has done so much for me." This, gentlemen, is my feelings towards the Ayrshires.

I shall not waste your time by speculating upon the origin of the breed, neither shall I give you a list of the breeds said by their promoters to be akin to the Ayrshires. Suffice it, then, to say that, with the espousing of our favorite cattle, there dawned upon the then poor, discouraged, ill-clad and ill-fed people of Ayrshire an era of prosperity that has increased in intensity as well as in magnitude until its light and heat of comfort have permeated the whole land of the harebell and heather. They have also crossed the billowy Atlantic with the animals that produced them, and we enjoy in our bossies the fruits of over a century's care and labor in selection and developmont.

That broad-minded political economist and philosopher, Henry George, has said that "land and labor are the prime factors of wealth." If we grant this hypothesis, we are immediately confronted by the question, how best to utilize these elements.

Experience in this country answers by the propagation and development of the dairy ndustry. The first step in this direction is to decide on the cow that will give the best returns for the time and labor expended on her. The writer of this paper spent years in solving this problem. He visited good herds of different breeds, closely observed their reatment and its results, found that each breed had its merits and its fancies, and that all breeds had furnished to the annals of the exhibitions some phenomenal animals. He was finally compelled, when he had exhausted all means available to him, to conclude, contrary to his best impressions, that the animal that will best suit all classes and conditions of farmers in this country is the Ayrshire cow. Not yet content he consulted a number of successful dairymen who were not married to any breed, but had tried specimens of different breeds, and their consensus of opinion strengthened the former conclusion. Indeed, one farmer and drover who lived in the suburbs of a smart little town, and was breeding another kind of cattle, said confidentially: "Although I find the cow fanciers of the towns and villages readily purchase the calves from my herd at fairly remunerative prices, yet I must admit that for buoyancy, constitution, ability to assimi-

late all kinds of food, power to endure hardship and respond nobly to kind treatment, the cow *par excellence* is the Ayrshire." He even went further and said: "During the last twenty years I have bought and sold a great many cows. I very often find when I drive into a man's yard and select some sleek, high-headed and good-looking animal, and ask the owner to put a price on her, that he will say, 'That is our Ayrshire cow, and we cannot spare her.'"

Did I hear someone say, "Does he not know that it was not an Ayrshire cow that won the sweepstakes at the leading fairs last fall?" Yes; and I know, too, that the winner is owned by a relative of my own and in my own county, the banner dairy county, dear old Leeds. Gentlemen, if the ghost of your poet Robbie Burns will forgive, I will say:

"Auld Leeds, whom ne'er a place surpasses
For splendid cows and bonnie lasses.

Do you think I would detract from the laurels of Mr. Gilroy's magnificent cow? Certainly not. I feel more like scolding you Ayrshire breeders who have so long headed the list that you seem to have become plethoric or surfeited with prizes. I doubt not but that the surprise you got last fall will make you hunger again for the fruits of the ring, and I expect when we meet next winter, instead of dilating upon the conquests of a distant cousin, I may have the opportunity of rejoicing with an Ayrshire brother.

No, gentlemen; there is no place to stand still. Either retrogression or progress will be the lot of every man. Who is content to stand at ease on fields already won will have the grim satisfaction of seeing his competitors turn up richer treasures at his very feet.

Before closing I desire to express a wish that each member of this Association may be careful to never, under any circumstances—not even to make a sale or win a prize—insinuate anything against the honor of another breeder or the merits of his herd. Such reprehensive conduct always has a reflex action, and will turn again and smite the striker. Better by far that each should endeavor to emit a ray of sunshine across the path of his fellow, and that all should labor to improve our favorite breed for our own particular benefit and the prosperity of the commonwealth.

I again invite you to criticize this paper, believing that by interchange of thought we can benefit each other, and remembering that it was in a discussion on my first paper that the millionaire lumberman and breeder of the Ottawa valley, while naming the fancy breeds in which he was interested, declared that for the farmer and dairyman the best animal in the world was the Ayrshire cow.

THE AYRSHIRE COW.

By Wm. Stewart, Jr., Menie.

It is with pleasure that I am here with you this afternoon as one of the many breeders of that noble little dairy cow, the Ayrshire. What more beautiful sight would you wish to see upon a fine lea than a herd of these magnificent creatures, with their nice mossy coats beautifully marked, their curved horns and capacious udders, and to see them come waddling "hame at milken time is a sight that wad dae ane's heart guid." It would no doubt remind some of our brother breeders of the time when they used to "paddle roun' their father's ain fireside in their ain Scottish hame." Then, brother breeders, let us join heart and hand in maintaining the high standard that has been reached in the breeding of these animals. Let us breed from the best and nothing but the best, culling out any that are inferior and sending them to the butcher, retaining only those that are of prime quality. In a former paper I dealt somewhat on the usefulness of the Ayrshire cow, a description of her points, her body, skin, teats and escutcheon.

And a word or two would perhaps not be amiss with regard to the developing of the calf into a useful dairy cow. In raising stock of any description the breeder has to be

guided by the kind of animal he or she wants to produce, hence the necessity of having a practical knowledge of what you want. If for beef encourage the calf from the very outset. If for the dairy avoid anything that has any tendency towards fat, and give food that will develop the milking system. Many a good heifer calf is spoiled for lack of knowledge in handling.

Milkers in all Breeds. We find good milkers in all breeds, but they are rare in some and very common in others. It could not be otherwise. Milk properties depend on the conditions which determine the formation of breeds, are due partly to climate, the soil, the air, and the plants of the countries where the breeds have originated; and must therefore vary in our different breeds of cattle with the hygienic conditions peculiar to each locality.

Milkers, and more especially animals intended for breeding, must be selected from among breeds celebrated for abundance of milk, not that we can hope to import into our department with a dry and warm climate all the qualities of the excellent milking breeds possessed by countries in which the soil is fertile, the air moist, and the sky often cloudy; but as the influence of climate, though very marked, takes effect only in the long run, the properties of the animals imported are maintained—though subject doubtless to gradual deterioration—during a period which varies with the precaution taken to preserve them; and for several generations the imported descendants of a good breed give more milk than individuals in a breed found on the spot, where hygienic circumstances are not favorable to milking properties. It is not to be fogotten, moreover, that under the influence of particular circumstances which it is sometimes impossible to call into existence, animals manifest properties which we cannot produce directly.

This explains why it is often more advantageous to import qualities possessed by foreign stock than to try to develop them in native stock, as milking qualities are in a great measure dependent on structure and temperament, which are more or less hereditary. Descent exercises a great influence.

Heredity. In each breed, therefore, we should choose individuals belonging to the best stocks, and the offspring of parents remarkable for their milking qualities; for it is certain that good milk cows produce others which resemble them. But it is especially necessary when soliciting stock for breeding milk cows, that particular care should be taken to select individuals belonging to good families, A cow of a bad milking family, or even breed, may occasionally be an excellent milker, and more than this is not wanted when it is not meant to breed from her. The same cannot be said when breeding is intended, because there would be little chance of her transmitting the accidental or exceptional qualities possessed by her, whereas the qualities forming the fixed and constant characters of the stock would almost to a certainty be transmitted to her descendants. These remarks with regard to breed and perentage apply to the selection of the bull, which, as experience demonstrates, acts like the cow in transmitting the milking qualities which distinguish the breed and stock.

Digestion. The digestive organs have a great influence on the exercise of all the functions, and particularly upon the secretions of the milk glands. Where the digestive organs are defective, good milk cows are rarely met with. Good digestive organs are known by a belly of moderate size, with yielding sides, free from tightness (in aged animals the belly is often large, though the organs which it contains are in good condition), a large mouth, thick and strong lips, a good appetite, easy and quick digestion, glossy hair, supple skin, and somewhat oily to the touch. Animals possessing these characteristics may be expected to feed and drink heavily, and if they are properly fed make much blood and yield large quantities of milk.

Respiration. The respiratory organs complete the system of nutrition. The lungs bring the air breathed into contact with the blood, and render the system of nourishment complete: hence a good form, quick digestion and a healthy condition of the lungs are necessary for the production of a large flow of milk.

Milk Veins. If the veins which surround the udder are large, winding and varicose (dilated at intervals) they show that the glands receive much blood, and consequently

that their functions are active, and that the milk is abundant. The veins of the lateral part of the belly are most easily observed, and are among the best tests for ascertaining the activity of the glands.

These veins issue from the udder in front, and at the outer angle, where they form, in very good cows, a considerable varicose swelling They proceed toward the front part of the body forming angles more or less distinct, often divided toward their anterior extremity, and sink into the body of several openings.

We can make the size of the milk veins prominent by compressing them in this passage, and by pressing at the place where they penetrate the body. If we press the finger strongly into the opening through which the veins passes, the width of the opening represents the diameter of the vein, and the thickness of the finger which stops it represents the volume of blood whose place it occupies. Sometimes the veins are divided, it is then necessary to examine all the openings by which they pass in order to form a correct estimate.

Veins of the Udder and Twist. The veins of the udder and twist are able to furnish valuable indications. They should in both cases be highly developed, large and varicose; that is, appear swollen and knotty. The veins of the udder have no definite direction. They present themselves irregularly with zig-zag lines, knotted, and more or less oblique. They are never of very large size, except in cows that give large quantities of milk.

The veins of the twist directed from above downward, forming a winding line interspersed with knots, resemble those of the udder in not being visible either in heifers or in cows of only fair milking quality. We cannot ascertain their presence in any but very good cows.

Of all the marks of abundant milk secretion, the best, and in fact the only infallible marks, are furnished by the veins of the twist and of the udder. To estimate them correctly it is necessary to take into account the state of the cow in respect to flesh, the thickness of the skin, food, ability to stand fatigue, heat, all the other circumstances in fact which cause variations in the general state of circulation, and in the dilation of the veins. It is necessary, moreover, to recollect that in both sexes all the veins are larger in the old than in the young; that the veins which encircle the udder are those which, if the cows are in milk, vary most according to the age of the animal, small when the animal is young, and continue to increase in size until after the cow has had several calves, when they come to their full development. This proportion between the size of the veins and the milk secreted, is observed in all females without exception, the size of the veins and their varicose state being due to the blood attracted by the increased activity of the milk glands, is not only the sign, but the measure of this activity—this connection, in fact. This connection is so close that if the glands do not give an equal quantity of milk, the larger veins are on the side of the udder which gives the largest quantity. The length of time during which milk is given corresponds with the activity of the organs which supply it.

Cows which give most milk a day do not always give it the longest. This may be caused by bad management through the inexperience of the breeder. The after usefulness of many a fine heifer has been robbed, and also the pockets of her owner through his own ignorance.

Having dealt somewhat lengthily on this subject, we would offer our best wishes to this Association, and to the gentlemen who for the past few years have spent their time and money in importing so many choice animals into this fair Canada of ours, and may the time be not far distant when we shall see a thoroughbred bull at the head of every dairy herd, or in every section throughout our fair domain. Away with the scrub; it will not pay you to keep him. Breed to a standard. This can be accomplished by using a pure-bred bull at the head of your herd, and you will be amply repaid for your trouble and expense.

THE HACKNEY HORSE SOCIETY.

ANNUAL MEETING.

The fourth annual meeting of the Hackney Horse Society was held at the Albion Hotel, May 15th, 1896.

Members present: Robt. Beith, M.P., President (in the chair); Geo. H. Hastings, Deer Park, Toronto; A. G. Bowker, Woodstock; H. N. Crossley, Rosseau; John Holderness, Toronto; A. E. Major, Whitevale; J. H. Nimmo, Toronto; H. Wade, Secretary and others.

The minutes of last meeting were read and confirmed.

The Secretary then read his annual report.

Secretary's Report.

To the President and Directors of the Hackney Horse Society.

I beg leave to present to you the fourth annual report of this Society, showing the business done in 1895 and 1896, to date.

Inspectors.

The names of the Inspectors now in Canada are as follows: John Carson, Kingston, Ont.; Dr. McLean, Meaford, Ont.; Jas. A. Cochrane, Hillhurst, Que.; Robt. Ness, Howick, Que.; Prof. McEachren, Montreal, Que.; T. G. Ferris, Portage la Prairie, Man.; A. S. Slip, Truro, N.S.; Dr. O'Neill, London, Ont.; Thos. Irving, Winchester, Ont.; Robt. Bond, Toronto, Ont.; Geo. H. Hastings, Deer Park, Toronto; Robt. Graham, Claremont, Ont.; Robt. Beith, M.P., Bowmanville, Ont; H. N. Crossley, Rosseau, Ont.; A. Wilson, Paris, Ont.

Thirteen gentlemen have paid their subscription of $5 for 1895; there is plenty of room for recruits.

Registrations.

We have had very few this last year owing to the dulness in the horse market. The recording of inspected mares with their fillies should be encouraged. As you are aware the registration fees since the 1st of January will be the property of the Hackney Horse Society, as per agreement with the Minister of Agriculture as read in the minutes.

Sales of Hackneys.

Sales have been very encouraging during the past year. R. Beith & Co., having sold the well known prize-winning stallion Ottawa, —2— (4440) and the well known imported mare Winnifred, —6—. The Graham Bros., Claremont, have also sold their well known champion stallion Kilnwick Foreaway (imp.), —5— (3698); Seagull (imp.), —8— (2261), and Dundrennen (imp.), —17— (2859). The Hillhurst Farm has also sold several, amongst them the well known Miss Baker (imp.), —16— (4371), to D. & O. Sorby, Guelph. Mr. George W. Hastings has also sold lately six or seven head of colts and fillies for a long price; he also sold sometime ago Star of Mepal 2nd (imp.), —29—, for a good price. There are others, no doubt, but I cannot give the particulars.

The exhibit of Hackneys at the spring show was very attractive, and notwithstanding the sale of so many this year, the classes were well filled. The appearance of

two first prize winners in the ring for the first time was hailed with delight. The show put up by the Hackney's was thoroughly appreciated by the audience and brought more applause than any other classes in the ring. If possible, we must add more classes another year, both in stallions and mares, to encourage more exhibitors to invest in this splendid breed of horses.

To the Canadian Horse Show of 1895, $295 was raised and paid over to them for the Hackney classes; to the Industrial $30, and to the Western Fair $25. This year to the Canadian Horse Show, $30 for a sweepstakes prize for stallions, and a $50 prize offered to the Industrial for 1896. For stallion and three of his get, 1st $35, 2nd $15. If the Western Fair does not clash with any other large show it will be well to offer it a prize also.

There have been one or two informal meetings of this Society during the past year in connection with the Canadian Horse Breeders' Association to consider the prize list in regard to Hackneys, horse show and other matters, as these two associations are intimately connected with one another in the advancement and the improvement of the horse. The Horse Breeders' Association is to look after the interests of all the breeds, and the Hackney Society is to look after their own particular breed; and the more success we can meet in obtaining new members the more premiums we will be able to offer at the different shows. It would be good policy if we could afford it, to offer a prize at Montreal and Winnipeg, as well as at Toronto and London.

The thanks of this meeting are due to the president and directors for their attention during the last year, without fee or reward, and also to our large-hearted host of the Albion Hotel for the use of his room to meet in at all times; and also for the generous way in which he provided for the inner wants of the Society and their friends in the Committee room at the Armories during the last show.

I also beg leave, as Treasurer, to submit the following statement:

Receipts.

1895.		
Jan. 1st.	Cash on hand	$146 00
April.	Collections for show purposes..	240 00
Dec.	Thirteen members at $5	65 00
Total		$451 00

Expenditures.

1895.		
April.	By cash to Canadian Horse Show, special prize	$60 00
"	By cash to Canadian Horse Show	235 00
Sept.	By cash Industrial Exhibition...	30 00
"	By cash to Western Fair	25 00
Dec. 31.	Cash on hand	101 00
Total		$451 00

Audited and found correct.

All of which is respectfully submitted.

HENRY WADE,
Secretary-Treasurer.

Moved by H. N. CROSSLEY, seconded by G. H. HASTINGS, that Mr. John Macdonald, of Toronto, and Mr. Adam Beck, of London, be accepted as members of the Hackney Horse Society. Carried.

Mr. H. WADE then read a circular which he had received from the Hackey Horse Society of London, England, offering silver medals to affiliated societies.

Moved by H. N CROSSLEY and seconded by Mr. A. G. BOWKER, that Mr. Wade correspond with Mr. H. F. Euren, secretary of the society, and ask if it is agreeable for him to offer medals at the Industrial Exhibition for Hackneys; also to make application for the next spring horse show. Carried.

ELECTION OF OFFICERS.

President—ROBERT BEITH, M.P., Bowmanville, Ont.

First Vice-President—H. N. CROSSLEY, Rosseau, Ont.

Second Vice-President—G. H. HASTINGS, Deer Park, Ont.

Vice-Presidents for the Provinces—Ontario, A. G. Ramsay, Hamilton, Ont.; Quebec, J. A. Cochrane, Hillhurst, Que.; Nova Scotia, Mr. Black, Nova Scotia; New Brunswick, Hon. D. McLelland, St. John's, N.B.; Prince Edward Island, Hon. James Clowe, Murray Harbor; North-West Territories, Mr. Rawlinson, Calgary, Alta.; Manitoba, A. J. Moore, Swan Lake, Man.; British Columbia, S. F. Tolmie, Victoria, B.C.

Directors—A. G. Bowker, Woodstock, Ont.; Robert Graham, Claremont, Ont.; John Holderness, Toronto, Ont.; Robert Davies, Toronto, Ont.; John Macdonald, Toronto, Ont.; N. Awrey, Hamilton, Ont.; R. Bond, Toronto, Ont.; Major R. McEwen, Byron; Robert Miller, Brougham, Ont.

Auditors—George H. Hastings and George Pepper.

Delegate to Industrial Exhibition—Henry Wade, Toronto.

Moved and seconded that the Secretary ask the Board of the Industrial Exhibition for the privilege of sending another delegate from the Hackney Horse Society, and if the request be granted, Mr. George H. Hastings be that delegate. Carried.

A valuable paper on "Hackneys" was read by Mr. George H. Hastings, of Deer Park, which was thoroughly appreciated by all present.

The meeting adjourned at 10 p.m.

HACKNEYS—1895.

By Geo. H. Hastings, Deer Park, Toronto, Ont.

The owners and breeders of the Hackney horse can hardly fail to regard the year 1895 as a season to be remembered.

Prime Hackneys have been in good demand in the home market. Prices made at public auction have been such as noboby could have anticipated a few years ago. Even the unpleasant things said by a few persons who suppose that they are well-informed in regard to horses may not be without their uses for those who desire the steady improvement of the Hackney.

It is a fact that great progress has been made since the Hackney Horse Society was founded on the 30th of June, 1883, and more especially since the society's first show in the spring of the year 1885—how great, even Hackney breeders are apt to forget. But those who do not look with a kindly eye on this evidence of public favor have a better memory. They recognize that, so far as the mass of horse breeders are concerned, the Hackney is the newcomer. Moreover, they have not cared to look up the evidence that the Hackney has in foreign lands, as well as at home, well sustained the test that is everywhere recognized as the best proof of purity of blood—the power to impress its own characteristics on the produce of mares of other varieties of the horse, not even excepting the eastern breeds and the British compound of eastern and the old English courser which we speak of as thoroughbred. Hackney breeders know that the purest blooded Hackney horses are just such another compound, but with the old English Hackney instead of the courser as the foundation, and they may readily admit that, as this breed were so few as to be spoken of as "well-nigh extinct" fifty years ago. Hackney owners had to master more of the science of breeding than has been demanded of the man whose taste is for the racer or the hunter. None should be more ready to admit that short pedigree has uncertainty as its attendant, since in recent years the one particular sought after by the owner of Hackneys is the back-breeding of sires and dams when a man desires to breed only the best.

Ireland saw last April the founding of an Irish Harness Horse Society, with an influential array of noblemen and gentlemen as its supporters. The declared purpose of this society is to increase the supply of harness horses, bred in Ireland by farmeos who cannot hope to produce a made hunter, as Hackney stallions have been the means by

which foreigners have been enabled to send to Great Britain "harness horses with action," for which there is a constant demand. The Harness Horse Society further proposes gradually to form a register of mares specially suitable for breeding harness horses.

The Harness Horse Society had stated that, after the horse show of 1894, "the different journals were unanimous in expressing their approval of the action of the Royal Dublin Society in re-introducing Hackney classes, stating that it was part of the society's duty to encourage a development of industry among all classes of farmers, and not practically to confine their efforts to one branch only of the horse trade." As a consequence, no classes were provided for Hackney stallions at the Dublin show of 1895, and there was only the barest possible recognition of Hackney mares. The excuse was that the breeding of hunters would be made more hazardous by the possibility of farmers using a Hackney stallion. It was further asserted that big carriage horses were harder to get in Yorkshire since farmers there had bred Hackneys more freely, this apparently discounting the promise held out to Irish farmers by the Harness Horse Society.

One result of this dog-in-the-manger policy has been a letter to *The Live Stock Journal* by Mr. R. G. Carden, of Fishmoyne, Templemore, Co. Tipperary, whose "whole aim," he says, "has been to breed weight carrying hunters with as much thoroughbred blood as possible." This unprejudiced observer, acting as judge at district shows instituted by the Congested Districts Board, gives one of the strongest possible testimonies yet received as to the value of the Hackney stallion; and this, be it remembered, when the horse was used over Irish country mares, "deficient in bone, quality and shape." Mr. Carden says of the young stock exhibited: "With regard to the young stock, the produce of the Hackney stallions, the really splendid show of two-year-olds, yearlings and foals, particularly the last, which came before us would have done credit to any show in the country, and it was hard to realize, when one saw the foals trotting beside their dams, that one could have been the offspring of the other, so much has the Hackney impressed his make and shape." Further proof of what the Hackney is already doing for Ireland is found in Mr. Carden's statement that many of the farmers had got nearly double the price for the produce of the Hackney stallion that they had been hitherto receiving.

Here is the promise of 1895 for British breeders of the prime Hackney, and it is also abundant warrant of increased efforts of the Irish Harness Horse Society.

Scotland has more than maintained the lively interest which has been aroused there by a few earnest lovers of the Hackney. Her Majesty the Queen is there an occasional exhibitor.

There is also a noteworthy readiness to provide classes which shall lead to the more general use of the Hackney stallion. This policy, in such strong contrast to that pursued in Dublin, is followed consistently both by the Highland and Agricultural and by the Edinburgh societies. County and district associations have thus a good example set them that is rapidly bearing fruit.

The year has, as we have said, been noted for the exceptional prices realized at several of the sales by public auction. Mr. Alexander Morton, in March, offered Hackneys and ponies from his stud at Gowanbank Darvel. A couple of Hackney geldings made 400 guineas, and the average for nineteen harness horses was £90 6s., as against £67 14s. 6d. for ten sold in 1893. Two sales on following days in the East Riding opened the English season.

At Mr. F. Usher's, Middlethorpe, the top price was 145 guineas, "Maggie Murphy," and 100 guineas was given for a yearling by His Majesty. The first seven mares sold made a total of 459 guineas.

Lady Cranbrook, 205 guineas; 8,215, Martha, 185 guineas. Sir Gilbert Greenall's Hackneys were offered at Tattersall's, when Orange Blossom was bid up to 1,400 guineas and withdrawn at 1,450 guineas. Amazement was withdrawn at 900 guineas. Sir Humfrey de Trafford's ponies, sold on September 5th, previous to the removal from Flodon to Swafield, in Norfolk, was yet more sensational: 4,703, Snorer II., 600 guineas; Georgina V., 600 guineas; 1,081, Dorothy Derby, 600 guineas; Dorothy Derby II., 720

guineas; 8,461, Snorer II., 700 guineas; Miss Sniff, yearling by Cassius, 900 guineas; Snorter, 4,995, 350 guineas; the stud of breeding ponies totalling £6,100 10s.

The reason of the phenomenal sale of the Hackney cobs is their suitability for breeding Hackney cobs and polo ponies, which are in great demand up to big weight and very fast and active for saddle. They fetch higher prices than the hunters, as they are quicker, and several large breeders are breeding this class of Hackneys.

General Gordon's stud sale of Hackney ponies on September 10th was followed two days later by another Lancashire opportunity, Mr. R. Hartley's Woodfold Park stud, at Blackburn. The top price at this sale was 250 guineas for Countess of Derby; 230 guineas was given for Fearless, three-year-old filly, and 170 guineas for Golden Belle, also a three-year-old.

In Canada there have been several good sales made, and only this month Mr. Geo. H. Hastings sold a complete stud of Hackneys and mares to go to North Carolina. They comprised: Black Prince, Miss Noble, Noble Girl, Soubrette, Little Duchess, sire Young Nobleman; Lady Bardolph and Geraldine, by Lord Bardolph and Norfolk Duchess. Two of them were left at A. J. Cassatt's farm to be bred to Cadet, and two were sent to Dr. Seward Webb to be bred to Matchless of Londesborough. The purchaser was more than pleased with them, and it is his intention to cross them with trotting mares, of which he has a large stud.

Americans are more and more demanding style and action in their pleasure horses, and there has also sprung up a good demand for geldings with the Hackney characteristics, which tends to the advantage of the importers and breeders.

THE CLYDESDALE HORSE ASSOCIATION.

ANNUAL MEETING.

The tenth annual meeting was held at the Albion Hotel, Toronto, on the 12th of February, 1896, beginning at 2 p.m.—the President, Robert Davies, Toronto, in the chair.

There were present: Peter Christie, Manchester; John Vipond, Brooklin; John Gardhouse, Highfield; H. N. Crossley, Rosseau; R. Miller, Brougham; D. Sorby, Guelph; O. Sorby, Guelph; Jas Gardhouse, Highfield; Jas. Davidson, Balsam; R. Graham, Claremont; G. Green, Toronto; Thomas Good, Richmond; William Wilkie, Toronto; R Herron, Ashburn; John I. Balsdon, Balsam; Thomas B. Davidson, Ashburn; George Clayton, Peepabun; Jas. Hood, Richmond West; Geo. Cockburn, Baltimore; J. B Spencer, *Farmer's Advocate*, London; John Weld, London; John Bell, Amber, and H. Wade, Secretary, Toronto.

The Secretary's annual report and the minutes of the last meeting were read by Secretary Wade and unanimously adopted.

Secretary's Annual Report for 1895.

I beg leave to present the tenth annual report of this Association, showing the business done during the last year.

Registrations.

We have only recorded seventy-six Clydesdales this year, but the outlook seems to be better, and no doubt a better business will be done this next year. It is to be regretted that many of our Canadian Clydesdale breeders have neglected to register their colts on account of the small demand there has been for them, but the time will soon come when they will be wanted, and it is a bad policy not to be prepared. The expense now to members to record a colt or filly is only $1.

Spring Stallion Show.

The anuual exhibition this year was held in conjunction with the Agriculture and Arts Association and the Toronto Country and Hunt Club. The joint exhibition was a grand success. As our finances were not in a flourishing condition, we were only able to contribute $100 to the prize list, in which $500 was offered. There were twenty-eight Clydesdales entered, the exhibit being very good indeed, especially in aged stallions.

This exhibition was held at the New Armouries and was a wonderful success. They have been secured again for this year, and doubtless arrangements will be made by the new Canadian Horse Breeders' Association, which takes the place of the Agriculture and Arts Association, to amalgamate with the Country and Hunt Club; if so, this will again be a magnificent success, and it is hoped that this old and tried Clydesdale Horse Association will do its best to keep up the credit of this favourite breed and make a display that will prove to the world that Canada is the best breeding ground outside of Scotland for the Clydesdale horse.

In spite of low prices for horses, good heavy draught geldings with quality and substance are in demand, and to those breeders who have been steadily raising young animals, a reward will soon be given by an active market for this class of stock, providing they are well kept.

Unfortunately, we met with a serious loss by the burning of the offices occupied by your Secretary, in which were stored several of the stud books, also the manuscript for

the mares of the eighth volume, then being printed. The manuscript for the stallions was at the printer's, so they are all printed in the eighth volume; but unfortunately, although a circular was issued asking for the original certificates to be returned so that they might be copied, a great many are missing, which makes the eighth volume much smaller than it would have been. If returned by the owners and breeders, they will still be eligible and will appear in the next volume.

As you are aware, the Agriculture and Arts Association, after fifty years of usefulness, has been legislated out of existence, and we have to look to the Ontario Government direct for any assistance for exhibition purposes. This has caused us to start the Canadian Horse Breeders' Association, subscription $1 por annum, to take the place of the Agriculture and Arts Association in asking for a grant to be divided up for prizes for all the different breeds of horses, as has been done formerly by the old association.

The Ontario Government becomes heir to all the stud books on hand printed by the Agriculture and Arts Association, and they will now be for the use and benefit of the Clydesdale Horse Association.

Vol. 1 is totally exhausted; Vol. 2, we have 200; Vol. 3, 350; Vol. 4, 250; Vol. 5, 350; Vol. 6, 310; Vol. 7, 300; Vol. 8, 500. Total, 2,260 volumes, unbound, besides a few bound ones in the office.

The fees since the 1st of January of this year also are the property of the Clydesdale Horse Association. During the past year, at a meeting of the Directors to consider a communication from the Minister of Agriculture, asking that two delegates be appointed to attend a meeting called by him on the Industrial Exhibition grounds, it was resolved that R. Davies, President, and David McCrae be those delegates; and at that meeting the scheme as presented by the Hon. John Dryden was accepted unanimously, and at a subsequent meeting on the 22nd of October, the following agreement was signed by the President, Mr. Davies, Mr. McCrae declining.

"We, the undersigned, delegates from the Clydesdale Horse Association, appointed for this purpose, hereby agree to pay the Registrar of Live Stock, duly appointed by the Government, the sum of 35 cents per pedigree for each certificate issued, and 15 cents for each transfer, he to do all the clerical work and proof-reading necessary to complete the volumes.

(Signed) ROBT. DAVIES."

Treasurer's Report.

I have the honor also as Treasurer to present to you the annual statement of receipts and expenditures, as verified by the auditors.

Receipts.

1885, Dec. 31,	To 66 paid members at $3	$198 00

Expenditures.

1895, Jan. 1st,	By Balance owing treasurer	$	9 60
Feb. 28th	Cash paid stenographer		5 80
May 15th	Cash grant to Horse Show		100 00
Nov. 28th	Cash Stud Books		42 75
Dec. 31st	Balance on hand		39 85
	Total	$198	00

Assets.

Jan. 1st,	Cash on hand	$ 39 85
	2,260 unbound volumes at $1 each	2,260 00
	Total	$2,299 85

(Signed) H. WADE,
Treasurer.

PRESIDENT'S ADDRESS.

The PRESIDENT: As you are aware, the Agriculture and Arts Association is now defunct, and a Canadian Horse Breeders' Association has been organized this year. We got the requisite fifty names here in Toronto, but it is still open for any more who wish to join. We waited on the Minister of Agriculture and asked him to assist in obtaining a grant for the prize list of the coming Horse Show, and I think we received a very favorable reception from the Government and they will now probably grant our request and give us $2,000 or $2,500 prize money for the coming show. We have on various occasions received from each association small amounts of money, but as the finances are small I think it would be as well to husband them and use as much as possible the money we are going to receive.

I received a letter from Mr. McCrae, who has been communicating with Mr. Galbraith as regards amalgamation of the Canadian and American Clydesdale Associations. We dealt with this last year, but came to no definite issue. I will read the letter and suggested basis from Mr. Galbraith, which are as follows:

R. DAVIES, ESQ., GUELPH, February 7th, 1896.
President Clydesdale Association.

DEAR SIR,—As you are aware, it has been proposed by the writer that the Canadian and American Clydesdale Associations should unite to make one powerful Association for America. This has been mentioned to the Secretary of the American Association, Mr. Alex. Galbraith, and by him brought before the office-bearers of that Society. Herewith please find a short memo. of the basis as proposed by Mr. Galbraith, and mentioned in discussion and by letter.

There seem to me to be many things in the scheme which would benefit Clyde breeders on both sides of the line. Our Associations would require still to be kept up to manage matters specially Canadian.

If the proposition commends itself to your Association meeting it would be well to appoint a committee of three to arrange details and report at a later meeting.

Yours, etc.,

D. MCCRAE.

Suggested basis of Amalgamation, by Alex. Galbraith, Secretary.

1. Recognition of all animals recorded in American and Canadian books.
2. Issue of certificates to Canadian horses.
3. All members—Canadian and American—on an equal basis with equal privileges.
4. Equal representation on the directorate.
5. Some compensation to those now holding stock in American Association. This includes many Canadians (life membership suggested).
6. Frequent publication of Stud Book and its circulation at a very nominal price.
7. Arranging details and basis by a joint committee of three from each Association, with power to act and report to their Associations for confirmation.

Now, it is for you to deal with this if you think fit to take this matter into your consideration, and appoint this committee to receive a committee from the American Association, and see what headway we make in it, or if it is advisable to go on any further. That is one matter to deal with to-day.

With regard to the Horse Show, we have taken the same position as last year—we asking one-third and the Country and Hunt Club two-thirds. Last year they gave in the

neighborhood of $2,280 and we gave some $2,000; we looked after all the interests of the breeding classes and they looked after the hunting, jumping and saddle classes. We held a meeting the other evening and agreed to go in on the same basis as last year, they to supply an equal amount of funds, and we expect the money we are about to receive from the Government will furnish all the prize money we require; and to-day it will be well for our Association here to revise our prize list and save you a great deal of trouble in coming back to Toronto again to make any improvements you like to make in it.

We hold this show four days in April, commencing on the 15th, and we hope to have the same success as we had last year, and to receive the strong support of the breeders all over the country in all breeds—Clydes, Shires, Hackneys, etc. I have nothing more to say to you, gentlemen, and now it is for you to act on the letter and see what is to be done.

The next order of business was the election of officers.

ELECTION OF OFFICERS.

President: ROBERT DAVIES, Toronto.

Vice President for Ontario: ROBERT BEITH, M.P., Bowmanville.

" " *Quebec:* ROBERT NESS, Howick

" " *Nova Scotia:* COL. CLARK BLAIN.

" " *New Brunswick:* A. S. MURRAY, Fredericton.

" " *P. E. I.:* W. P. BALDERSON, N. Wiltshire.

" " *Manitoba:* J. E. SMITH, Brandon.

" " *N. W. T.:* JOHN A. TURNER, Calgary. / J. M. MCFARLANE, Saskatchewan.

Directors: ROBERT GRAHAM, Claremont; GEORGE COCKBURN, Baltimore; JOHN DAVIDSON, Ashburn; R. MILLER, Brougham; D. SORBY, Guelph; JOHN VIPOND, Brooklin; GEO. CLAYTON, Peepabun.

Delegates to Fairs.

Toronto: WM. SMITH, M.P., Columbus; JOHN DAVIDSON, Ashburn.

Western: E. G. CHARLTON; HENRY WADE, Toronto.

Ottawa: THOMAS GOOD, Richmond, Que.

Mr. Wade then read a resolution that had been passed at the Shire meeting in the morning, *re* exhibitors getting their stock into the Industrial Exhibition grounds on Thursday of the first week instead of Monday of the second, as had been customary heretofore. He also pointed out some of the reasons why this should be done, saying that the Secretary of the Industrial Board could not make arrangements with the railways for cheap rates the first week because the stock was not there, hence the exhibition not complete; also, buyers from the other side would have more time to talk with the breeders and owners of stock as regards purchasing if they were in earlier.

Mr. Hill, manager of the Toronto Industrial, explained the wish of the Directors of the Industrial.

Moved by D. SORBY, seconded by ROBT. MILLER, and carried: "That this Association having heard the proposal of the Secretary of the Industrial Fair Association, that the exhibitors of cattle and horses shall have their stock on the Toronto fair grounds not later than Thursday noon of the first week, expresses its willingness to conform to this proposal, providing it does not interfere with their exhibiting at any other important show."

MR. DAVIDSON moved, and R. GRAHAM seconded the following resolution; "That a committee of three delegates from this Association meet with a like number from the American Clydesdale Association, to discuss terms of amalgamation and to report to this Association the result before consummation."

MR. MILLER: Mr. President, I would like to say a word with regard to the motion. I would like to speak to it before it goes to the meeting. I can hardly speak as an independent member of this Association, as I am a member of the American Association. I am a member of the Board of Directors there, and it might be said I was interested in making that Association as successful as possible, perhaps to the detriment of this Association. There was a time when we Clydesdale breeders were prosperous, when we could register our horses once or twice without giving it much consideration. Now, sir, we all know that breeding horses has been a very poor business lately. In order to pass our horses into the United States we must have them recorded in their book, and the way everything is at present we cannot afford to register them twice, also we can register them as cheaply in that country as in this. I will give you some idea of what the President of the Clydesdale Association in the United States proposed to me in a communication. He said he would propose an amalgamation on something like the following lines. He said we will accept a horse already registered in the Canadian stud book; we will accept a horse whose sire and dam are registered in our Canadian book and will remove those penalty fees which the people of Canada have to pay. The minimum fee for registering horses there is $2, that is the same charge, I believe as registering horses in our book here, and I think that settles the point of registration; we know it does not cost the same amount that it did some years ago. In order to become a member of the American Clydesdale Association it is necessary to purchase one share of stock, which costs $10, and that makes you a member for life and you have then the privilege of registering your horses for a cheap rate, which rate I have mentioned here to you. Mr. Miller went on to show how at the present time the horsemen were reaping no benefit from registering here as when they sold to an American buyer they must have their animals registered over on the other side, and concluded by suggesting that this Association appoint two or three delegates to meet an equal number from the American Clydesdale Association in view of coming to terms of amalgamation.

MR. DAVIES: I know what we have had to suffer from the hands of the American Clydesdale Association. I know it cost me a considerable amount of money to put my horses in. If there is a dollar in this country they must have it. They used to allow our animals to pass over free of duty if they had four top crosses, but they raised it one more cross and put a barrier against us. All matters will have to be gone into thoroughly before I would think of giving my consent as to amalgamation. It is all very well to make a suggestion, but we must consider it well before thinking of going any further.

Mr. WADE thought the Association should be very careful before making any move in that direction."

MR. DAVIDSON: I do not think that any person need be alarmed, because if we did not find everything satisfactory to us or the breeders of Ontario we would not submit to it.

MR. MILLER moved and MR. ROBERT GRAHAM seconded, that Mr. Davidson, Mr. David Mc. Crae and Mr. Robert Beith, M.P. be members of the committee to meet the committee from the American Clydesdale Association.

Mr. Davidson's resolution re amalgamation was also carried, and Mr. Robert Miller was instructed to communicate with the American Clydesdale Association to appoint a committee to meet our delegates here during the Horse Show.

The following Judges were appointed: Robt. Ness, Howick, Que., Richard Gibson, Delaware; Jas. McIntosh V. S., Brucefield; Mr. Graham, St. Mary's.

PRIZE LIST AMENDMENTS.

Moved by Mr. ROBT. MILLER, seconded by MR. R. GRAHAM. "That a Sweepstakes prize be given (amount $100) to the best draught pair of mares or geldings, to be sired by a registered Clydesdale stallion." Carried.

The meeting adjourned at 5 p. m.

COMMITTEE MEETING.

A meeting of the committee of the Clydesdale Horse Association was held in the Albion Hotel, April 17th, 1896.

Members present: R. Davies, President, Toronto; David McCrae, Guelph; D. Sorby, Guelph; Robt. Miller, Brougham; and Alex. Doherty, Ellesmere.

The President: A motion was passed at the last annual meeting appointing this Committee for the purpose, as I understand it, of meeting Mr. Ogilvie and Mr. Galbraith from the American Clydesdale Horse Association, in order to see if any terms could be arrived at as regards amalgamation, but as there is such a small representation here it is for you to say weather it is advisable or not for us to go on.

It was the wish of the meeting to discuss the matter briefly, and as the American gentleman could not be present they left their interests in the hands of Mr. Robert Miller, who read the following letter from Mr. Ogilvie, of Madison, Wis., President of American Clydesdale Horse Association.

Madison, Wis., April 6th, 1896.

Robt. Miller, Esq.,

Brougham, Ont.

My Dear Sir and Friend,—Owing to the fact that Alex. Galbraith, Secretary of the American Clydesdale Association, will not return from England in time to meet with the Canadian officials on the 18th of the month, to consider the advisability of consolidating the Canadian Association with ours, and that it will be impossible for me to meet with them on the occasion in question, it will be necessary for you to represent us and plead our cause. The basis on which Messrs. Galbraith, Holloway and myself feel that the two Associations should unite is as follows:

1st. Discontinue the publication of the Canadian stud book, and in the future our Association to accept the Canadian stud book as standard in the registration of all Canadian stock. The relationship of present members of our Association residing in Canada will of course remain as heretofore. Those who are not members to be treated precisely as non-members residing in the country.

Canadians wishing to join our Association will at once be given an opportunity by our placing on the market a sufficient number of shares to supply both present and future demand. You can grant them six months in which they can register all unrecorded horses without being charged the penalty fee. When issuing certificates to Canadian breeders we will continue to furnish custom house certificates in connection with the one given in regular form. I am not aware that there are any other points that can in question be raised which should be considered in connection with the consolidation.

As the President of our Association, I hereby authorize you, our Vice-President, to close the deal with them as above outlined. And we will at a subsequent meeting of our Board endorse your action in the premises I wish that you might get an expression from the Canadian breeders as to how the distribution of our stud books can best and most satisfactorily be made. It is the desire of each and every member of our Board to so conduct the affairs of our Association in the event of the two being merged into one that the interests of all will be protected and advanced. As you know, there are greater advantages accruing to the Canadians than there are to us by carrying out the proposed compact. We share our better market with your people by the deal. We get in return some assistance in meeting the current expenses of our Society. And the Canadians are saved the entirely unnecessary burden of supporting the Canadian institution. Our American certificate has, to say the least, an equal value to a Canadian certificate in Canada, while on this side of the line it has a much greater value. The advantage to the Canadians in having an intelligent secretary visiting them occasionally and writing for our press the standing of your breeding—the progress being made by them—and in a general way advertising Canada as a favorable market to buy in cannot but be of great value to them.

This letter was freely discussed by those present, Mr. Davies being of the opinion they had arranged everything to suit themselves; they own the majority of stock no doubt, and our people might not feel disposed to invest $10 in stocks for this Asssociation, and if they did not then we would be completely wiped out, as they would have the majority when it came to voting on any question that affected our interests.

Mr. McCrae thought there was a point just here and asked the question if this way of making the $10 stock the basis of the Association was the best or not. He thought we might make a better way of amalgamation and show the Americans it is to their interest. He would rather see a Clydesdale Asssociation in Ontario, one in Quebec, and one in every state in the union, with enough horsemen to join, and those who do to make a center Association and they publish the book. There was another trouble. Supposing we here in Ontario had a meeting in Chicago, we cannot all go there, and he would suggest that we have a representation by cities or provinces and one man go and carry the votes. This Association in Ontario would send delegates and the American send delegates and these men have power of voting for the whole Association.

Mr. Davies speaking on recording said: If you have some horses that are not worth recording, then to compel a man to record them, then he is out quite a lot of money.

Mr. McCrae: As far as recording goes, I understand they get six months without any penalty fee.

Mr. Miller explained that it was $2 to register a horse under twelve months old; after that it is $4.

Mr. McRae on the matter of distributing books said: My idea on that is that every member should get one copy of the book free, and any extra copies he wanted as near the actual cost as possible—if it cost 85 cents charge $1. My reason for that is this: I think it would be an advantage to have the stud books as they would advertise your horses I am in favor of all with the exception of this popular system of members.

Mr Davies: There is a lot in there I object to.

Mr. Miller thought we might make an offer to amalgamate with them and have certain changes brought about in their constitution.

Mr Davies: You see they are to do all the printing, also they have the majority of stock; they would call our meeting over to Chicago, and it would be a very serious expense for our people to go there, and if everybody here did not attend we would be no use whatever, as we would not have sufficient members to carry any resolutions to our interests.

Mr. McCrae: Do you think they would be willing to give an alternate meeting?

Mr Miller: I have given it a great deal of consideration, and I do not think they would. If we go on recording here we are going to get no benefit whatever, and I am still strongly in favor of amalgamation and would like to see a more popular system.

Mr. McCrae suggested that a resolution be drawn up to have a more popular system of membership arrived at, and it was moved by David McCrae, seconded by D. Sorby, "That the Committee be thanked for their work and for the offer from the American Association, and that they be requested to endeavor to arrange some more popular system of membership than the stock basis now proposed."

Moved by Mr. Sorby and carried, that Mr. David McCrae's name be added to the Committee appointed at the annual meeting for the purpose of meeting the American Clydesdale gentlemen.

The meeting adjourned subject to the call of the President.

THE SHIRE HORSE ASSOCIATION.

ANNUAL MEETING.

The annual meeting of the Shire Horse Association was held at the Albion Hotel on Wednesday, the 12th of February, 1896.

Members present: Messrs. H. N. Crossley, W. E. Wellington, W. Wilkie, John Gardhouse, Jas. M. Gardhouse, J. Y. Ormsby, De Warren Green, H. Wade, and others.

H. N. Crossley, Vice-President, in the Chair.

Secretary's Seventh Annual Report.

Gentlemen,—I recorded only ten Shires in 1896—just enough to keep the Association alive—but hope for an increased number this year as the demand for heavy draft geldings and mares is on the increase. I am sorry also to report that we met with a heavy loss by the fire on the third of March, which destroyed the office formerly occupied by your Secretary; all the manuscript of the first volume was destroyed, with all the information as to the early imported horses of this breed. It will be a very difficult matter to collect it all again, and we never can unless Shire men send in their certificates for us to copy. We have had a great many sent in, but there are several that have not, as yet, been received. We were in a position to have printed our first volume had it not been for the loss; it will now take some time to gather up the missing links.

No doubt you are aware that the Agriculture and Arts Association, that has conducted all your registrations up to this date, has been legislated out of existence, and the work formerly done by them has been assumed by the Ontario Government, who have appointed me as Registrar of Live Stock. The work will be carried out on a different footing. The registration fees for the future, as well as the members' fees, will be the property of the Shire Horse Association; I, as registrar, to be paid a commission by this Association for recording and preparing the proof for the printers.

A special directors' meeting was called on the 10th of July to take into consideration a communication from the Minister of Agriculture, asking for a delegation of two to be appointed to meet during the Industrial Exhibition to take into consideration the future conduct of the stud book, and at that meeting Mr. John Gardhouse and Mr. Horace N. Crossley were appointed delegates; also at that meeting the scheme outlined by the Hon. Mr. Dryden was accepted unanimously, and at another meeting held on the 22nd of October the following agreement was signed by the delegates:

We, the undersigned delegates from the Shire Horse Association appointed for this purpose, hereby agree to pay the Registrar of Live Stock the sum of thirty five cents for each certificate issued, and fifteen cents for each transfer, he to do all the clerical work and proof reading necessary to complete the volumes.

(Signed) { Horace N. Crossley, John Gardhouse.

Treasurer's Statement.

Receipts.		*Expenditures.*	
1895. Jan. 1, Cash on hand	$27 00	1895. May, Grant to Canadian Horse Show	$20 00
		Balance on hand	7 00
		Total	$27 00

(Signed) H. Wade,
Treasurer.

ELECTION OF OFFICERS.

The following officers were elected :

President : H. N. CROSSLEY, Rosseau.

Vice-President for Ontario : W. E. WELLINGTON, Toronto.

" *Quebec* : A. DAWES, Lachine, Que.

" *Manitoba* : HENRY NUNN, Brandon, Man.

" *P. E. Island* : GEO. TWEEDY, Charlottetown.

Directors : JOHN GARDHOUSE, Highfield ; W. HENDRIE, jr., Hamilton ; J. Y. ORMSBY, Toronto ; W. WILKIE, Toronto ; W. MULLIN, Hillsburg ; JAS. M. GARDHOUSE, Highfield ; and GEO. GARBUTT, Thistleton.

Secretary : HENRY WADE, Toronto.

Delegate to Industrial Exhibition : H. N. CROSSLEY, Rosseau.

Judges :

J. Y. Ormsby, Toronto,
John Gardhouse, Highfield,
H. N. Crossley, Rosseau,
J. G. Wardlow, Downsview,
John Warilow, Owen Sound,
Richard Gibson, Delaware.

Moved by J. Y. ORMSBY, and seconded by WM. WILKIE, That the membership fee to the Shire Horse Association in future be collected annually and remain the same as before, $3. Carried.

Upon motion it was recommended that an extra class, as described below, be added to the prize list : Filly or gelding foaled in 1893 or subsequently, three prizes.

Moved by JOHN GARDHOUSE and seconded by J. Y. ORMSBY, That this Association having heard the proposal of the secretary of the Industrial Fair Association that the exhibitors of cattle and horses shall have their stock on the Toronto fair grounds not later than Thursday noon of the first week, expresses its willingness to conform to this proposal provided it does not interfere with their exhibiting at any other important show. Carried.

It was resolved that $20.00 be offered as sweepstakes to the Canadian Horse Show.

CANADIAN HORSE BREEDERS' ASSOCIATION.

HORSE SHOW COMMITTEES.

The second annual meeting of the Horse Show committees was held at the Queen's Hotel, February 10th, 1896, at 8.30 p.m.

There were present, from the Country and Hunt Club: Messrs. Geo. W. Beardmore, Major Hay, Lieut.-Col. Otter, Jas. Carruthers, R. O. McCulloch, John Macdonald, E. Bristol and S. Houston; from the Canadian Horse Breeders' Association: Robt. Davies, N. Awrey, Dr. A. Smith, H. N. Crossley, Wm. Hendrie, jr, and H. Wade.

Mr. ROBT. DAVIES was requested to act as Chairman.

After considerable discussion by the members present as to the basis of union, it was moved by Dr. A. SMITH, seconded by Mr. CARRUTHERS, That the show be held under the same partnership rules and regulations as last year, as follows:

Between the Canadian Horse Breeders' Association and the Country and Hunt Club of Toronto (Limited):

(1) The Canadian Horse Show shall be held under the joint auspices of the Country and Hunt Club and the Canadian Horse Breeders' Association at Toronto, on Wednesday, Thursday, Friday and Saturday, April 15th, 16th, 17th, and 18th.

(2) The Canadian Horse Breeders' Association shall have charge of breeding classes, give prizes, receive entry moneys and pay judges in those classes.

(3) The Country and Hunt Club shall have charge of harness, saddle and hunting classes, give prizes, receive entry moneys and pay judges in those classes.

(4) The general expenses, not including prizes and Judges expenses, shall be borne in the proportion two thirds by the Country and Hunt Club and one-third by the Canadian Horse Breeders' Association

(5) The surplus of general receipts over general expenses shall be divided two-thirds to the Country and Hunt Club and one-third to the Canadian Horse Breeders' Association.

(6) The expenses shall be subject to approval of joint committee management.

It was moved by JOHN MACDONALD, seconded by WILLIAM HENDRIE, JR., that the show be confirmed under the name of *The Canadian Horse Show* and that it be held in the New Armouries on the 15th, 16th, 17th and 18th of April next. Carried.

An executive Committee was then appointed from the Joint Committees as follows: Messrs. R. Davies, N. Awrey, Dr. A. Smith, Wm. Hendrie Jr., H. N. Crossley and H. Wade from the Horse Breeders' Association and Messrs. G. W. Beardmore, Major John D. Hay, Lieut.-Col. Otter, John Macdonald, D. Bristol, R. O. McCulloch, Jas. Carruthers, and Stewart Houston from the Country and Hunt Club.

Moved by JAS. CARRUTHERS, seconded by R. O. MCCULLOCH, that the names of the Judges be submitted by each association to the General Joint Committee for approval before being notified.

Moved by GEO. W. BEARDMORE, seconded by MAJOR HAY, that Robt. Davies, Esq., be appointed Chairman of the Canadian Horse Show Association. Carried.

Messrs. Henry Wade and 'Stuart Houston were appointed Joint Secretaries, Mr. Wade to receive entries and act as Treasurer and Mr. Houston to attend to the other duties in connection with the Horse Show.

It was moved by Dr. Smith, seconded by Wm. Hendrie Jr., that a prize of $50 be offered for the most artistically designed poster for this show, this prize to be open to artists of the United States and Canada. Designs will be received until March 10th and will be passed upon by a committee of experts.

[This prize was awarded to Miss Harriet Ford, Toronto.]

Moved by Mr. Bristol, seconded by Mr Carruthers, that Messrs. Robt. Davies, John Macdonald, S. Houston and H. Wade be a committee to arrange with the City corporation for a grant to the Horse Show.

The General Committee then adjourned until Monday afternoon, to meet at the Jockey Club office at 4 o'clock, to receive a report of each association as to the list of prizes to be awarded.

SECOND ANNUAL CANADIAN HORSE SHOW.

Following is the result of the prizes awarded in the different classes of the Second Annual Canadian Horse Show, held in the Armouries, Toronto, on April 15th, 16th, 17th and 18th, 1896, under the joint management of the Canadian Horse Breeders' Association and the Country and Hunt Club of Toronto.

LIST OF PRIZES AWARDED.

THOROUGHBREDS.

Stallions, Foaled Previous to January 1st, 1893.

Judges:—E. W. Haggard, V S., Lexington, Ky., U. S.; Capt. Massie, Kingston, Ont.

1st. "Mikado," brown, star on forehead, foaled in 1881. Exhibited by Robert Davies, Toronto; sire, King Ernest; dam, Mimi.

2nd. "Wyndham," bay, foaled in 1888. Exhibited by S. B. Fuller, Woodstock; sire, Warwick; dam, by Mortimer (imp.)

3rd. "Tyrone," 337, brown, foaled in 1884. Exhibited by T. H. Hassard, V. S., Milbrook, Ont.; sire, Mortimer (imp.); dam, Gyptis, by Australian (imp), etc.

4th. "Pillarist," (imp.), dark brown, foaled in 1885. Bred by W. S Martin, England. Exhibited by Alexander Holmes, Beachville, Ont.; sire, Trappist; dam, Philomela, by King of the Forest, etc.

5th. "Parisian," (imp.), bay, foaled in 1885. Exhibited by Robert Davies, Toronto; sire, Charibert; dam, Wee Lassie.

Stallions, Foaled Subsequent to and on January 1st, 1893.

1st "Cinders," dark brown, foaled in 1893. Exhibited by John O'Neill, Toronto; sire, Cheviot; dam, Algebra (imp.)

2nd. "Disturbance III" (imp.) 195; chestnut, foaled in 1893. Exhibited by John Dyment, Orkney, Ont.; sire, Morion; dam, Katrine.

Stallions, Qualified to Improve the Breed of Saddle Horses and Hunters.

1st. "Wiley Buckles," bay, foaled in 1885. Bred by Wm. Buckles, Champagne, Ill, U.S. Exhibited by Quinn Bros, Brampton; sire, London; dam, Lizzie.

2nd. "Godard," chestnut, foaled in 1885 Bred by Chinn & Morgan, Lexington, Ky. Exhibited by Graham Bros., Claremont, Ont; sire, King Ban (imp.); dam, Ella Breckenridge.

3rd. "Semper Rex," chestnut, 16; foaled in 1889. Bred in Lexington, Ky. Exhibited by Wm. Hendrie, Hamilton; sire, Lelaps; dam, La Sylphide.

Sweepstakes,—Prince of Wales Prize for the Best Thoroughbred Stallion Any Age.

1st. "Mikado." (See class 1.) Exhibitor Robert Davies, Toronto.

Filly or Gelding, Bred and Owned by Exhibitor, Not Thoroughbred, Foaled in 1893, Likely to Make a Hunter or Saddle Horse; Sired by a Thoroughbred Stallion, and to be Shown on Line.

1st. "Donovan," bay g., foaled in 1893. Exhibited by J. J. Dixon, agent, Toronto; sire, Chicken (imp.)

2nd. "Dennison," bay g., foaled in 1893. Exhibited by W. O. Law, Zephyr, Ont.; sire, Dennison (imp.)

FILLY OR GELDING, NOT THOROUGHBRED, FOALED IN 1892, LIKELY TO MAKE A HUNTER OR SADDLE HORSE; SIRED BY A THOROUGHBRED STALLION. THIS CLASS MUST BE RIDDEN.

1st. "Golden," ch. g., foaled in 1892. Exhibited by Andrew Smith, Toronto; sire, Golden Gate (imp.)

2nd. "Monte," bay g., foaled in 1892. Exhibited by R. O. McCulloch, Toronto; sire, Dandy Dinmont.

3rd. "- ——," br. m., 15-3, 4 years. Exhibitor, R. Bond, Toronto.

4th. "Billy A," ch. m., foaled in 1892. Exhibited by Robt. Chambers, Cu rie's Crossing, Ont; sire, Aspinwall.

CARRIAGE OR COACH.

STALLIONS, FOALED SUBSEQUENT TO AND ON JANUARY 1ST, 1893; NOT LESS THAN 16 HANDS IN HEIGHT.

1st. "Prince George," bay, foaled in 1893. Exhibited by W. C. Brown, Meadowvale, Ont.; sire, Prince Victor; dam, Hattie Bell.

STANDARD BRED ROADSTER.

STALLIONS, FOALED PREVIOUS TO JANUARY 1ST, 1893.

JUDGES:—Jacob Erratt, Ottawa; C. E. Elliott, V.S., St. Catharines.

1st. "Altoneer" 17493, bay, foaled 1890. Bred by H. E. McCully, Toronto. Exhibited by Edmond Taylor, Toronto; sire, Phinx; dam, Pilotena.

2nd. "Wiry Jim" 15617, bay, foaled in 1890 Bred by J. T. Hedges, Middletown, Ky. Exhibited by R. Robson, Brampton; sire, Young Jim 2009; dam, Annettemore.

3rd. "Bookmaker Jun.," bay, foaled in 1892. Exhibited by T. Boyes, Churchhill, Ont.; sire, Bookmaker (4392); dam, Maud M.

4th. "Bryson," brown, foaled in 1889. Exhibited by Hugh Scott, Caledonia, Ont.; sire, Simmons; dam, Lena by Clark's Chief.

5th. "Baron Brownie" 27235, black, foaled in 1892. Bred by B. J. Treacy, Lexington, Ky. Exhibited by Harry Webb, Toronto; sire, Bermuda 5874; dam, Maud X.

STALLIONS, FOALED SUBSEQUENT TO AND ON JANUARY 1ST, 1893.

1st. "Uncle Bob" 23785, brown, foaled in 1893. Exhibited by Hugh Smith, Claude, Ont.; sire, Wildberries; dam, Brownie, by General Brock.

2nd. "Charity Bell" 28397, brown, foaled in 1894. Bred by McFarran & Clancy, Crescent Hill, Ky. Exhibited by Harry Webb, Toronto; sire, Liberty Bell 13201; dam, Loi, by Combat 1038.

SPECIAL—STANDARD BRED ROADSTER STALLIONS, FOALED IN 1894.

1st. "Charity Bell." (See class 10) Exhibited by Harry Webb, Toronto.

SPECIAL—STANDARD BRED ROADSTER FILLIES, FOALED IN 1894.

1st. "Findus," brown, foaled in 1894. Exhibited by Thos. Hodgson, V.S., Toronto; sire, Wildbrino 10073; dam, Vixen, by Coaster 418.

2nd. "Alecia Bell," chestnut, foaled in 1894. Bred by McFarren & Clancy, Crescent Hill, Ky. Exhibited by Harry Webb, Toronto; sire, Liberty Bell 13201; dam, Alecia N.

SPECIAL—STANDARD BRED ROADSTER MARES, ANY AGE, BUT AGE CONSIDERED.

1st. "Almeria," bay, foaled in 1893. Bred by B. J. Tracey, Lexington, Ky. Exhibited by Harry Webb, Toronto; sire, Bermuda 5874; dam, Mary Brown, by Egbert 1136.

2nd. "Wiltonwood," bay, foaled in 1892. Bred by B. J. Treacy, Lexington, Ky. Exhibited by Harry Webb, Toronto; sire, Wilton 5982; dam, Maggie Nutwood.

HACKNEYS.

STALLIONS, FOALED PREVIOUS TO JANUARY 1ST, 1893, OVER 15 HANDS 2 INCHES.

JUDGE:—R. P. Sterricker, Springfield, Ill.

1st. "Royal Standard," (imp.)—55—(3918); bay, white hind feet, 15.3½, foaled in 1890. Bred by B. H. Lane, Limavady, Ireland; imported in 1895, and exhibited by Graham Bros., Claremont; sire, Excelsior (118); dam, Royal Lady (imp.) (379).

2nd. "Fireworks," (imp.)—16—(6302); brown, 15.3¾, foaled in 1890. Bred by James Scott, Clay Field, Pocklington, Yorkshire, England; imported in 1893; exhibited by H. N. Crossley, Rosseau, Ontario; sire, Wildfire (1224); dam, Pretty Polly (4574).

3rd. "Courier." (imp.)—26—(1751); bay, 16, foaled in 1887. Bred by C. E. Cooke, Litcham, Norfolk, England; imported in July, 1890, by Dr. W. Seward Webb, Shelburne, Vt., U.S.; exhibited by A. G. Ramsay, Hamilton, Ontario; sire, Canvasser (114); dam, May Day (479).

4th. "Lord Roseberry II.,"—4—brown, off fore foot white, 15.3½, foaled in 1892. Bred and exhibited by Robert Beth & Co., Bowmanville, Ontario; sire, Jubilee Chief (imp.)—1—(2122); dam, Florence (imp.)—3—(661).

STALLIONS, FOALED PREVIOUS TO JANUARY 1ST, 1893, NOT EXCEEDING 15 HANDS 2 INCHES.

1st. "Moorland," (imp.)—28—(4420); bay, black legs, 15.2, foaled in 1890. Bred by Joseph Moor, Yorkshire, England; exhibited by Thos. Irving, Winchester, Ontario; sire, Lord Swanland (1834); dam, Fan (5286).

2nd. "Banquo,"—3—dark bay, star on face, four white feet, foaled in 1892. Bred and exhibited by Robert Beith & Co., Bowmanville, Ontario; sire, Jubilee Chief (imp.)—1—(2122); dam, Mona's Queen (imp.)—4—(5887).

3rd. "The Shah," (imp.)—47—(2678); black, 15.1½, foaled in 1886. Bred by James Coker, Beetley Hall, Eng.; imported and exhibited by A. G. Bowker, Woodstock, Ont; sire, Adonis (12); dam, Black Bess (32).

4th. "Royal Dane," (imp.)—11—bay, star on face, front feet white, 15.1½, foaled in 1892. Imported and exhibited by the Hillhurst Farm, Hillhurst, Que.; sire, Canny Man (2882); dam, Princess Dagmar (imp.)—10—(4590).

5th. "Black Prince,"—50—dark brown, foaled in 1891. Bred and exhibited by Geo. H. Hastings, Deer Park, Ont.; sire, Young Nobleman (imp.)—30—(2328); dam, Betty—34—.

STALLIONS, FOALED IN 1893.

1st. "Barthorpe Performer," (imp.)—52—(5097); dark chestnut with star, foaled in 1893. Bred by Thos. Jennings, Yorkshire, Eng.; imported and exhibited by the Hillhurst Farm, Hillhurst, Que.; sire, Duke of Connaught (3009); dam, Princess (3208).

2nd. "Rosseau Performer" (imp.)—34—(5097); chestnut roan, foaled in 1893. Bred by John T. Browne, Doncaster, Yorkshire, Eng.; imported in 1894; exhibited by H. N. Crossley, Rosseau, Ont.; sire, Enthorpe Performer (2973); dam, Fanny (111).

3rd. "Danish Prince,"—24—chestnut, four white feet, foaled in 1893. Bred and exhibited by the Hillhurst Farm, Hillhurst, Que.; sire, Fordham (imp.)—36—(287); dam, Princess Dagmar (imp.)—10—(4590).

STALLIONS, FOALED SUBSEQUENT TO AND ON JAN. 1ST, 1894.

1st. "Danish Duke,"—53—bay, snip on nose, hind ankles white, foaled in 1894. Bred and exhibited by The Hillhurst Farm, Hillhurst, Que; sire, Fordham (imp.)—36—(287); dam, Princess Dagmar (4590).

2nd. "Gentility," (imp.)—54—brown, hind ankles white, foaled in 1894. Bred by R. G. Heaton Chatteris, Eng.; imported and exhibited by The Hillhurst Farm, Hillhurst, Que.; sire, Agility (2799); dam, Miss Baker (4371).

3rd. "Rosseau Fireball,"—39—brown, white star on nose, two white hind feet, foaled April 27th, 1894. Bred and exhibited by H. N. Crossley, Rosseau, Ont; sire, Fireworks (imp.)—16—(3602); dam, Lady Cocking (imp.)—11—(5530), by Royal George (683), etc.

MARES, THREE YEARS OLD AND UNDER.

1st. "Jessica,"—25—brown star on forehead, four white feet, foaled in April, 1894. Bred and exhibited by Robert Beith & Co., Bowmanville, Ont.; sire, Jubilee Chief (imp.)—1—(2122); dam, Mona's Queen (imp.)—4—(5887)

2nd. "Portia,"—41—chestnut, with star, foaled in 1895. Bred and exhibited by Robert Beith & Co., Bowmanville, Ont; sire, Ottawa (imp.)—2—(4440); dam, Florence (imp.)—3—(661).

3rd. "Victoria,"—46—chestnut, blaze on face, white front feet, foaled in 1895. Bred and exhibited by H. N. Crossley, Rosseau, Ont.; sire, Fireworks (imp.)—11—(5530).

4th. "Birdie,"—47—black, foaled in 1895. Bred and exhibited by H. N. Crossley, Rosseau, Ont.; sire, Fireworks (imp)—16—(3602); dam, Lady Bird (imp.)—15—(5510).

5th. "Fannie Bardolph,"—38—chestnut, blaze on face, white feet, foaled in July, 1893. Bred and exhibited by G. H. Hastings, Deer Park, Toronto; sire, Lord Bardolph (imp.)—32—(412); dam, Norfolk Duchess (imp.)—12—(2355).

STALLION AND THREE OF HIS GET. STALLION TO COUNT 30 PER CENT., 3 COLTS, 70 PER CENT.

1st. "Jubilee Chief," (imp.)—1—(2122); black, four white feet, foaled in 1887. Bred by Wm. Martin, Scoreby Grange, Yorkshire, Eng; imported in 1890 by Robert Kerr, Raeburn, Man; exhibited by Robert Beith & Co., Bowmanville, Ont.; sire, Pilot (1323); dam, Queen of the Forest (297).

His get: "Lord Rosebury II.,"—4—. (See class 11.) Banquo—3—. (See class 12.) Jessica—25—. (See class 15.) Exhibitors, Robert Beith & Co., Bowmanville.

2nd. "Courier,"—36—. (See class 11.)

His get: Miss Courier—34—; Vermont; Trilby—50—; exhibitor, Logie Farm, Mt. Albion, Ont.

SWEEPSTAKES, BEST HACKNEY, ANY AGE, GIVEN BY THE HACKNEY HORSE SOCIETY.

1st. "Royal Standard," (imp.)—55—(3918). (See class 11.) Exhibitors, Graham Bros., Claremont.

HIGH STEPPER MARE OR GELDING, NOT UNDER 15 HANDS; CONFORMATION AND STYLE OF GOING, AS WELL AS HIGH ACTION, TO BE CONSIDERED; TO BE SHOWN BEFORE A SUITABLE CONVEYANCE, AND SIRED BY A REGISTERED HACKNEY STALLION.

1st. "Althorpe Duchess," (imp.)—21—bay m., 15.1¾, 4 years; sire, Caxton (2398); exhibitor, H. N. Crossly, Rosseau.

2nd. "Prefect," ch. g., 15 3½, 4 years; sire, Perfection (imp.); exhibitor, Llewellyn Meredith, London.

3rd. "Confidence," br. g., 15.1½, 6 years; sire, Confidence; exhibitor, T. S. Weld, London.

4th. "Cherry Ripe,"—8—bay m, 15.1¾, 4 years; sire, Seagull (imp.)—8—(2261); exhibitor, John Holderness, Toronto.

5th. "Mona's Queen," (imp)—4—(5887); ch. m., 15.1, 7 years; sire, Lord Derwent II. (1034); exhibitors, Robert Beith & Co., Bowmanville.

SHIRES.

STALLIONS, FOALED PREVIOUS TO JANUARY 1ST, 1893.

JUDGES:—Richard Gibson, Delaware; J. Y. Ormsby, Toronto.

1st. "Pride of Hatfield," (imp.) [256]; bay, stripe on face, three white legs, foaled in 1890. Bred by G. Smales, Gowdall, Yorkshire, Eng.; imported in 1894; exhibited by Morris, Stone & Wellington, Welland, Ont; sire, Lincolnshire Lad II. (385); dam, Flower.

2nd. "Bravo II.," (imp) [250] (12836); bay, foaled in 1888. Bred by R. N. Sutton, Nelthorpe, Scawby Hall, Lincolnshire, Eng; imported in 1893; exhibited by H. N. Crossley, Rosseau, Ont.; sire, Will-o-the-Wisp (6574); dam, Boadicea.

3rd. "Darnley," (imp) [183] (3585); brown, foaled in 1882. Bred by Thos. Johnston, Peterborough, Eng.; imported and exhibited by George Garbutt, Thistletown, Ont.; sire, Champion (450); dam by Thumper (2137).

MARE, ANY AGE.

1st. "Lizzie," (imp.) [32]; bay, foaled in 1833. Bred by T. Brown, Welshpool, Scot.; exhibited by Morris, Stone & Wellington, Welland, Ont.; sire, Pride of Leighton (3261); dam, Diamond.

2nd. "Rosseau Pearl," [89]; bay, blaze on face, four white feet, foaled in 1892. Bred and exhibited by H. N. Crossley, Rosseau; sire, Headon Panneret (imp.) [224]; dam, Sapphire (imp.) [79] For sale.

3rd. "Belle," [106]; bay, stripe on face, white on feet, foaled in 1893. Bred and exhibited by Morris, Stone & Wellington, Welland, Ont.; sire, Prince Charles [196]; dam, Alice (imp.) [33].

4th. "Midnight," alias "Bess," of Winona [107]; black, foaled 1885. Bred by Geo. F. Lewis, Winona, Ont.; exhibited by Wm Hendrie, Hamilton, Ont.; sire, Duke of Lancaster (2566); dam, Countess Blyth, by Duke of Wellington (2324).

SWEEPSTAKES, GIVEN BY SHIRE HORSE ASSOCIATION FOR SHIRE STALLION, ANY AGE.

1st. "Pride of Hatfield," [256] See class 19. Exhibitors, Morris, Stone & Wellington, Welland, Ont.

CLYDESDALES.

STALLIONS FOALED PREVIOUS TO JANUARY 1ST, 1893.

JUDGE.—Robert Ness, Howick, Que.

1st. "The Royal Standard," (imp.) [2221] 10014, brown, white on face, hind legs white, foaled May, 1892. Bred by Mr Robertson, Linkwood, Scotland; imported in 1895 and exhibited by Graham Bros., Claremont, Ontario; sire, Royalist (6242); dam, Bebrinda (101050), etc.

2nd. "Prince of Quality," [2173] 5648, black, ratch on face, hind legs white, foaled March, 1889. Bred by Robert Holloway, Alexis, Illinois, U.S.; exhibited by Robert Davies, Toronto; sire, Cedric (imp.) 929, (1087); dam, Jeanie Roy (imp) [2245], etc.

3rd. "Erskine Macgregor," (imp.) [2225] 7543, bay, white face, foaled April 15th, 1892. Bred by John Gilmour, Fife, Scot.; imported 1893; exhibited by C. E. Clarke, St. Cloud, Minn.; sire, Lord Erskine (1744); dam, Tinwald Forest Flower (9527), etc.

4th. "Lewie," [2177] 7294, bay, hind legs white to hocks, off front foot white, foaled May 5th, 1892 Bred and exhibited by John Davidson, Ashburn, Ont.; sire, Lewie Gordon (imp.) [1602] 5530, (7918); dam, Highland Maid Sixth [1823] 2381.

5th. "Craichmore Darnley," (imp.) [2127] (5667), bay, white face, four white legs, foaled in April, 1886. Bred by Wm. McMaster, Scotland; imported and exhibited by T. W. Evans, Yelverton, Ont.; sire, Darnley (222); dam, Flora (843).

6th. "Erskine Style," [2121], bay, ratch on face and off hind pastern white; foaled in May, 1891. Bred and exhibited by John Vipond, Brooklin, Ont.; sire, Erskine (imp.) [1652] (4986); dam, Brooklin Metal (imp.) [1877] (11165).

7th. "Ingram's Heir," [2224] 6950, bay, stripe on face, hind legs white, foaled April, 1892. Bred by N. P. Clarke, St. Cloud, Minn.; exhibited by C. E. Clarke, St. Cloud, Minn.; sire, Sirdar (imp.) (4714); dam, Sonsie (imp.) 5287, etc.

Stallions Foaled in 1893.

1st. "Locksley," [2192], bay. stripe on face, four white feet, foaled in 1893. Bred and exhibited by Robert Beith & Co, Bowmanville; sire, Sir Walter (imp.) [1131] (8272); dam, Maria (imp.) [979].

2nd. "Stanley," [2227] 7677, dark brown, little white on feet and legs, foaled June, 1893. Bred by N. P. Clarke, St. Cloud, Minn.; exhibited by C. E. Clarke, St. Cloud, Minn.; sire, Stanley Prince 3971; dam, Coila (imp.), etc.

3rd. "Whitby Champion," [2175], brown, ratch on face, hind feet white, foaled May 10th, 1893. Bred and exhibited by John Vipond, Brooklin, Ont.; sire, New Day (imp.) [1912], (8076); dam, Heather Bloom (imp.) [2093], by Farmer's Boy (2097), etc.

Stallions Foaled Subsequent to and on January 1st, 1894.

1st. "King's Own," [2172], brown, off hind foot white, foaled May, 1894. Bred and exhibited by Robert Davies, Toronto; sire, Queen's Own (imp.) [1708] (7176); dam, Candour (imp.) [1656], etc.

2nd. "Sensation," (imp.) Foaled in 1894. Bred in Scotland; imported and exhibited by Graham Bros., Claremont, Ont; sire, Macgregor (1487); dam, Clara; by Lord Erskine (1744).

3rd. "Glen Alpine," [2231] 8061, dark bay, foaled May, 1894. Bred by N. P. Clarke, St. Cloud, Minn.; exhibited by C. E. Clarke, St. Cloud, Minn.; sire, Esquire of Park (imp.) [2178] (7699); dam, Young Bloom (imp.) 7554.

4th. "Macqueen," [2218], dark bay, ratch on face, hind heels white, foaled in 1894. Bred and exhibited by Alex. Doherty, Ellesmere; sire, Queen's Own (imp.) [1708] (7176); dam, Miss Fleming [1919].

CANADIAN BRED CLYDESDALES.

A Canadian bred horse is defined by the Clydesdale Association for exhibition purposes as a horse that does not trace on the side of its dam to an imported mare, and has been foaled in Canada.

Stallions Foaled Previous to January 1st, 1893.

1st. "Ashburn Hero," [2093], bay, ratch on face, white hind feet, foaled Aug ist 15, 1891. Bred and exhibited by Job White, Ashburn, Ont.; sire, Tannahill (imp.) [1205] (4745); dam, Jess of Brooklin [1641], by General Duke (imp.) [6] (1721), (1663), etc.

2nd. "Captain Willie," [2170], bay, stripe on face, little white on feet, foaled May, 1892. Bred by Alsop Bros., Glasgow, Ont.; exhibited by Joseph Alsop, Glasgow, Ont.; sire, Lord Lieutenant (imp.) [9?5], (4529); dam, Jessie Annan [2133].

3rd. "King Craft," light bay, foaled in 1891. Exhibited by Alex. Holmes, Beachville, Ont., sire, Custodian [1762]: dam, Nellie Zorra [1727].

Stallions Foaled in 1893.

1st. "City Boy," [2174], bay, stripe on face, white hind feet, foaled May 27th, 1893. Bred and exhibited by W. J. Howard, Dollar, Ont.; sire, The Granite City (imp.) [709] (5697); dam, Spunk [2199], by Lord Salisbury (imp.) [246] 428 (2977), etc.

CANADIAN BRED OR IMPORTED CLYDESDALE.

MARES, ANY AGE.

1st. "Nelly," (imp.) [1323], bay, stripe on face, near hind foot white, foaled May, 1888. Bred by David Alston, Crosslee Stow, Scot.; imported in 1890 by Graham Bros, Claremont, Ont.; exhibited by Robert Davies, Toronto: sire, Lord Lynedoch (4530); dam, Maggie, of Hynford (1).

2nd. "Pride of Thorncliffe," (imp.) [1937], bay, stripe on face, hind legs white, foaled April, 1891. Bred by L. D. Gordon Duff, Drummuir, Scot; imported in 1890 by Graham Bros., Claremont; exhibited by Robert Davies, Toronto; sire, Lord Montrose (7973); dam, Pride of Drummuir (imp.) [1325].

3rd. "The Queen," [2263], bay, foaled May, 1893. Bred by Wm. Carter, Pickering, Ont.; exhibited by Graham Bros., Claremont, Ont.; sire, Scottish Leader; dam, Bet, by Mountaineer.

4th. "Boydston Lass II.," [2007], brown, white on face, foaled March, 1889. Bred and exhibited by James I. Davidson & Son, Balsam, Ont.; sire, Prince Imperial [74] (1258); dam, Boydston Lass [1930].

5th. "Candour," (imp.) [1656], brown, star on face, hind legs white, foaled May, 1890. Bred by J. Williamson, Langlands, Scot; imported in 1891 by Graham Bros., Claremont, Ont; exhibited by Robert Davies, Toronto; sire, Macgregor (1487); dam, Darling (5148).

SWEEPSTAKES—DRAUGHT PAIR OF MARES OR GELDINGS SHOWN IN HARNESS, TO BE SIRED BY A REGISTERED CLYDESDALE STALLION; GIVEN BY THE CLYDESDALE HORSE ASSOCIATION.

1st. "Harry," bay g., 16¾, 5 years; sire, Bold Boy 2nd [2099]; "Jim," bay g., 16¾, 6 years; sire, McGowan; exhibitor, Geo. Moore, Waterloo.

2nd. "Douglas," foaled in 1889; sire, McFadyen (imp.) [894] (4562); "Rasper," foaled in 1892; sire, Self Esteem (imp.) [377] (5344); exhibitor, Wm. Hendrie, Toronto.

3rd. "Candour," (imp.) [1656]. (See class 28.) "Young Lily," (imp.) [1672]. (See class 28.) Exhibitor, Robert Davies, Toronto.

4th. "Boydston Lass II.," [2007]. (See class 28.) "Queen," [2262]; sire, Lewis Gordon (imp.) [1602] (7918); exhibitors, James I. Davidson & Son, Balsam.

5th. "Maud," bay m., 4 years; sire, MacNeilage (imp.) [1117] (2992); "Lucy," bay m., 4 years; sire, MacNeilage (imp.) [1117] (2992); exhibitors, Breakey Bros, Newtonbrook, Ont.

SWEEPSTAKES, BY INDUSTRIAL EXHIBITION ASSOCIATION, FOR BEST CLYDESDALE STALLION OF ANY AGE, EITHER IMPORTED OR CANADIAN BRED.

1st. "The Royal Standard," (imp.) (10014). (See class 23.) Exhibitors, Graham Bros., Claremont.

HARNESS, SADDLE, HUNTING AND SPECIAL CLASSES.

Under the auspices of the Country and Hunt Club of Toronto (Limited).

HORSES IN HARNESS.

MARE OR GELDING OVER 14 HANDS 1 INCH, AND NOT EXCEEDING 15 HANDS 1 INCH. TO BE SHOWN TO A GIG, CART OR PHÆTON.

JUDGES.—Orson Moulton, Batavia, N.Y.; R. P. Sterricker, Springfield, Ill.

1st. "Shelah," bay m., 14-2, 8 years. Exhibitor, S. S. Howland, Mt. Morris, N.Y.

2nd. "Patriot," br. g., 15, 7 years. Exhibitor, S. S. Howland, Mt. Morris, N.Y.

3rd. "Jessie A.," blk. m., 15, 4 years. Exhibitor, W. A. Lawrence, Milton.

MARE OR GELDING OVER 15 HANDS 1 INCH, AND UNDER 15 HANDS 3 INCHES. TO BE SHOWN TO A GIG, DOG CART OR PHÆTON.

1st. "Puritan," br. g., 15-2½, 5 years. Exhibitor, S. S. Howland, Mt. Morris, N.Y.

2nd. "Adonis," br. g., 15-2½, 5 years. Exhibitor, S. S. Howland, Mt. Morris, N.Y.

3rd. "Quero," bay g., 15-2½, 6 years. Exhibitor, A. R. Curzon, Guelph.

4th. "Althorpe Duchess," (imp.)—21—bay m., 15-1¾, 4 years. Exhibitor, H. N. Crossley, Rosseau.

MARE OR GELDING, 15 HANDS 3 INCHES AND OVER. TO BE SHOWN TO A GIG, DOG CART OR PHÆTON.

1st—"Q. C.," bay g., 16-1, 5 yrs. Exhibitors, Toronto Horse Exchange.

2nd—"Persimmons," ch. g., 16, 5 yrs. Exhibitor, S. S. Howland, Mt. Morris, N. Y.

3rd—"Cid," br. g., 16, 4 yrs. Exhibitors, Robert Beith & Co., Bowmanville.

PAIR OF HORSES OVER 14 HANDS 1 INCH, AND NOT EXCEEDING 15 HANDS 1 INCH. TO BE SHOWN TO A FOUR-WHEELED VEHICLE.

1st—Gelding, 15-1, 6 yrs.; gelding, 15-1, 6 yrs. Exhibitor, D. T. Lowes, Brampton.

2nd—"Flirtilla," br. m., 15, 5 yrs.; "Fairy Queen," br. m., 15-1, 6 yrs. Exhibitors, Robert Beith & Co., Bowmanville.

3rd—"Monica," bay m., 15-1, 5 yrs.; mate. Exhibitor, Mrs. J. H. Spink, Toronto.

PAIR OF HORSES OVER 15 HANDS 1 INCH AND UNDER 15 HANDS 3 INCHES. TO BE SHOWN TO A FOUR-WHEELED VEHICLE.

1st—"Adonis," br. g., 15-2½, 5 yrs.; "Patrician," br. g., 15-2½, 5 yrs. Exhibitor, S. S. Howland, Mt. Morris, N. Y.

2nd—"Dallas," bay g., 15-2; "Dalson," bay g., 15-2. Exhibitor, D. T. Lowes, Brampton.

3rd—"Confidence," br. g., 15-1¼, 6 yrs.; "Conceit," br. g., 15-1, 5 yrs. Exhibitor, T. S. Weld, London.

4th—"Bess," gr. m., 15-3, 5 yrs.; "Rose," bay m., 15-3, 6 yrs. Exhibitor, Albert E. Gooderham, Toronto.

PAIR OF HORSES 15 HANDS 3 INCHES AND OVER. TO BE SHOWN TO AN APPROPRIATE FOUR-WHEELED VEHICLE.

1st—Exhibitor, Geo. Gooderham, Toronto.

2nd—"Banker," bay g., 16, 6 yrs.; "Broker," bay g., 16, 6 yrs. Exhibitor, S. S. Howland, Mt. Morris, N. Y.

3rd—"Black Prince," blk. g., 15-3½, 5 yrs. "Mate," bay g., 15-3½, 6 yrs. Exhibitor, D. T. Lowes, Brampton.

4th—"Roscoe," gr. g., 15-3, 5 yrs.; "Rufus," ch. g., 15-3, 5 yrs. Exhibitors, Widner & Son, Simcoe.

PAIR OF HORSES.

Best and best appointed gentleman's pair (dealers excluded), to be driven by owner. Horses not to be under 15 hands 2 inches. To be driven to a T cart, mail phæton or spider phæton, or other suitable vehicle. Horses to count 60 per cent., appointments 40 per cent.

JUDGES—Francis T. Underhill, New York; Orson Moulton, Batavia.

1st—"Venus," bay m., 15-2, 6 yrs.; "Diana," bay m., 15-2, 7 years. Exhibitor, G. A. Case, Toronto.

2nd—"Honor Bright," bay m., 15-3; "Winsome," bay m., 15-3. Exhibitor, John Macdonald, Oaklands, Toronto.

3rd—"Bess," gr. m., 15-3, 5 yrs.; "Rose," bay m., 15-3, 6 yrs. Exhibitor, Albert E. Gooderham, Toronto.

PAIR OF HORSES NOT UNDER 15 HANDS 2 INCHES. TO BE SHOWN BEFORE A BROUGHAM. HORSES TO COUNT 60 PER CENT., BROUGHAM AND GENERAL APPOINTMENTS, 40 PER CENT.

1st—Not named. Exhibitor, John Macdonald, Oaklands, Toronto.

2nd—"Bess," gr. m., 15-3, 5 yrs; "Rose," bay m., 15-3, 6 yrs. Exhibitor, Albert E. Gooderham, Toronto.

TANDEMS.

HARNESS TANDEM, WHEELER TO BE OVER 15 HANDS.

JUDGES—Francis T. Underhill, New York; Orson Moulton, Batavia.

1st—"Galore," bay g., 16, 5 yrs.; "Encore," bay g., 15-3½, 5 yrs. Exhibitors, Toronto Horse Exchange, Toronto.

2nd—"Adonis," br. g., 15-2½, 5 yrs.; "Puritan," br. g., 15-1½, 5 yrs. Exhibitor, S. S. Howland, Mt. Morris, N. Y.

BEST AND BEST APPOINTED TANDEM.

The wheeler to be over 15 hands. Gentleman driver. To be shown to a dogcart or tandem-cart. Horses to count 75 per cent., appointments 25 per cent.

1st—"Jack," g., 15-3; "Lass," m., 15-2. Exhibitor, G. W. Beardmore, Toronto.
2nd—Not named. Exhibitors, Toronto Horse Exchange, Toronto.
3rd.—"Grenadier," b. g., "Grenade," b. m., G. A. Stimson, Toronto.

FOUR-IN-HANDS.

ROAD TEAMS NOT UNDER 15 HANDS. MAY BE SHOWN BEFORE A COACH, DRAG OR BRAKE.

JUDGES—Francis T. Underhill, New York; Orson Moulton, Batavia.

1st—"Osceola," bay g., 16; "Black Prince," blk. g., 15-3½, 5 yrs.; "McGregor,"; "Rob Roy." Exhibitor, D. T. Lowes, Brampton.
2nd—Not named. For sale. Exhibitors, Toronto Horse Exchange, Toronto.

TEAM, TO BE SHOWN BEFORE A COACH OR DRAG. HORSES TO COUNT 60 PER CENT., APPOINTMENTS 40 PER CENT.

Equal for 1st--For sale. Exhibitors, Toronto Horse Exchange, Toronto. Exhibitor, Geo. W. Beardmore. Toronto.

SADDLE HORSES.

MARE OR GELDING, OVER 14 HANDS 2 INCHES AND NOT EXCEEDING 15 HANDS 2 INCHES.

JUDGES—Francis T. Underhill, New York; Turnbull Cary, Genessee; Colin Campbell, Montreal.

1st—"Blazer," ch. g., 15-2, 6 yrs. Exhibitor, S. B. Fuller, Woodstock, Ont.
2nd—"Jacobite," br. g., 15-1½, 7 years. Exhibitor, S. S. Howland, Mt. Morris, N. Y.
3rd—"Chula," ch. m., 15-1½, 6 yrs. Exhibitor, A. E. Osler, Toronto.
4th—"Miss Dales," b. m. Exhibitor, Hillhurst Farm.

MARE OR GELDING, OVER 15 HANDS 2 INCHES.

1st—"Queen," bay m., 15-3, 5 yrs. Exhibitor, John A. Gunn, Toronto.
2nd—"The Earl," ch. g., 15-2½, 7 yrs. Exhibitor, S. S. Howland, Mt. Morris, N. Y.
3rd—"Lossie," br. m., 16-1, 6 yrs. Exhibitor, Frederick Wyld, Toronto.

LADY'S SADDLE HORSE, NOT UNDER 14 HANDS 3 INCHES.

1st. "Queen," bay m., 15-3, 5 years. Exhibitor, John A. Gunn, Toronto.
2nd. "Black Beauty," blk. g, 15-3, 7 years. Exhibitor, A. S. Chisholm, Oakville.

BEST SADDLE AND HARNESS HORSE.

Special prize for best combination saddle and harness horse, mare or gelding, 15 hands and over, to be shown first in harness, then under saddle in the same class. Mouth and manners to be specially considered.

1st. "Cotillon," ch. m., 15-3, 8 years. Exhibitor, Hillhurst Farm, Hillhurst, Que.
2nd. "Viola," br. m., 16-1, 6 years. Exhibitor, Fred Doane, Toronto.

HUNTERS AND JUMPERS.

A horse to be eligible for the qualified hunters' classes must have been regularly hunted with a recognized pack of hounds for more than one season and within a year from date of entry, or have won a first or second prize at a recognized horse show or exhibition. For the purposes of this show a green hunter is one which has not been hunted more than one season and has never won a first or second prize at a recognized horse show or exhibition. Certificates required if necessary.

QUALIFIED HUNTERS (HEAVYWEIGHT), UP TO CARRY 180 LBS.

Conformation and quality to count 60 per cent., performances over fences to count 40 per cent. A horse taking a prize in this class ineligible for lightweight class. To carry at least 168 lbs.

JUDGES.—Francis T. Underhill, New York ; Trumbull Cary, Genessee ; Colin Campbell, Montreal.

1st. "Grey Friar," gr. g., 16-1, aged. Exhibitor, Geo. A. Carruthers, Toronto.
2nd. "Cockatoo," br. g., 16, 7 yrs. Exhibitor, Geo. W. Beardmore, Toronto.
3rd. "Prince Charlie," bay g., 16-½, aged. Exhibitor, J. F. Crean, Toronto.

QUALIFIED HUNTERS (LIGHTWEIGHT), UP TO CARRYING 150 LBS. TO HOUNDS.

Conformation and quality to count 60 per cent., performances over fences to count 40 per cent. To carry at least 140 lbs.

1st. "The Earl," ch. g., 15-2½, 7 yrs. Exhibitor, S. S. Howland, Mt. Morris, N. Y.
2nd. "The Swell," bay g., 15-2, 7 yrs. Exhibitor, Wm. Buckle, Guelph, Ont.
3rd. "Lady Bird," br. m., 16, 6 yrs. Exhibitor, S. S. Howland, Mt. Morris, N. Y.

GREEN HUNTERS (HEAVYWEIGHT), UP TO CARRYING 180 LBS. TO HOUNDS.

Conformation and quality to count 60 per cent., performances over fences 40 per cent. A horse taking a prize in this class ineligible for lightweight class. To carry at least 168 lbs.

1st. "Viola," br. m., 16-1, 6 yrs. Exhibitor, Fred Doane, Toronto.
2nd. "Highflier," bay g., 16-1, 6 yrs. Exhibitor, S. S. Howland, Mt. Morris, N. Y.
3rd. "The Maid," bay m., 16-2, 6 yrs. Exhibitor, J. Phillips, Toronto.

GREEN HUNTERS (LIGHTWEIGHT), UP TO CARRYING 150 LBS. TO HOUNDS.

Conformation and quality to count 60 per cent., performances over fences to count 40 per cent. To carry at least 140 lbs.

1st. "Jack," bay g., 15-3, 7 yrs. Exhibitor, Geo. W. Beardmore, Toronto.
2nd. "Jacobite," br. g., 15-1½, 7 yrs. Exhibitor, S. S. Howland, Mt. Morris, N. Y.
3rd. "Sir James," gr. g., 15-3, 6 yrs.. Exhibitor, Andrew Smith, Toronto.

FOR THE BEST PERFORMANCE OVER SIX JUMPS, 2 AT 4 FT., 2 AT 4 FT. 6 IN., 2 AT 5 FT., CARRYING NOT LESS THAN 140 LBS.

1st. "Lady Bird," br. m., 16, 6 yrs. Exhibitor, S. S. Howland, Mt. Morris, N. Y.
2nd. "Prince Charlie," bay g., 16-½, aged. Exhibitor, J. F. Crean, Toronto.

HIGH JUMP, LIMITED TO SIX FEET, CARRYING 140 LBS.

The trial for the high jump commences at 4 ft. 6 in., and will then be raised to five feet, and will be raised three inches at a time up to the limit. In case of horses jumping a tie, the judges are to award the prize to the horse showing the best form of jumping.

1st. "Lady Bird," br. m., 16, 6 yrs. Exhibitor, S. S. Howland, Mt. Morris, N. Y.
2nd. "Highflier," bay g., 16-1, 6 yrs. Exhibitor, S. S. Howland, Mt. Morris, N. Y.
3rd. "Oxford Belle," bay m., 15-3½, 5 yrs. Exhibitor, Wm. Chambers, Currie's Crossing, Ont.

CORINTHIAN CLASS. OPEN TO HUNTERS.

Horses must be ridden by members of some recognized Hunt. Conformation and quality to count 25 per cent., performances over fences to count 75 per cent.

1st. "Prince Charlie," bay, g., 16-½, aged. Exhibitor, J. F. Crean, Toronto.
2nd. "The Earl," ch. g., 15-2½, 7 yrs. Exhibitor, S. S. Howland, Mt. Morris, N. Y.

ROADSTERS.

(Standard or Non-Standard.)

A roadster, when mature for driving, should not be under 15 hands high. Conformation, style of going, manners, hock and knee action, whether driven with ordinary or heavy shoes to force action, and as the horses are and appear at the time of showing in the ring, will be considered in judging. To be shown in harness to a road wagon.

Mare or Gelding.

Judges :—Jacob Erratt, Ottawa ; Chas. Elliott, V.S., St. Catharines.

1st. "Belle Howard," bay m., 15-2, 6 yrs. Exhibitor, Edmond Taylor, Toronto.
2nd. "Bella Cook," bay m., 15-2, 7 yrs. Exhibitor, C. A. Burns, Toronto.
3rd. "Jardine," ch. g., 15-3, 6 yrs. Exhibitor, J. J. Burns, Toronto.
4th. "Victoria," blk. m., 15-1, 4 yrs. Exhibitor, H. Cargill & Son, Cargill, Ont.

Pair of Mares or Geldings.

1st. "Bella Cook," bay m , 15-2, 7 yrs.; "Eva," bay m., 15-2¼, 6 yrs. Exhibitor, C. A. Burns, Toronto.
2nd. "Victoria," blk. m , 15-1, 4 yrs.; "Sunol," blk. m., 15, 6 yrs. Exhibitor, H. Cargill & Son, Cargill, Ont.
3rd. "Cricket," blk. m., 15-2, 6 yrs.; "Captain," blk. g., 15-1, (4 yrs.) Exhibitor, H. Cargill & Son, Cargill, Ont.

PONIES.

Pony under 13 Hands, to be Ridden by a Boy or Girl.

Judges :—Messrs. Underhill, Moulton.

1st. "Creta," blk. m., 12-3, 4 yrs. Exhibitor, Robert Davies, Toronto.
2nd. "Sam," bay g., 12½, 3 yrs. Exhibitor, V. Cawthra, Toronto.
3rd. "Victor," bay g., 12½, 4 yrs. Exhibitor, Robert Davies, Toronto.

Pony over 13 Hands and not Exceeding 14 Hands 1 inch.

To be shown in harness and driven by a boy or girl.

1st. "Fauntleroy," bay g., 13-1½, 4 yrs. Exhibitor, Hillhurst Farm, Hillhurst, Que.

Best Pony Turn Out, Appointments, Etc.

Single pony under 13 hands, to be driven by a boy or girl. Pony to count 60 per cent., appointments 40 per cent.

1st. "Queen Lillian," ch. m., 12½, 6 yrs. Exhibitor, Mrs. Geo. C. Taylor, Toronto.
2nd, "Trilby," bay m , 11, 5 yrs. Exhibitor, Mrs. O. M. Arnold, Toronto.

Jumping Class.

Ponies under 14 hands, to be ridden by boys not over 14 years of age. Boys employed in or about stables excluded. Performances over fences only to count.

1st. "Black Bess," blk. m., 13-3, 8 yrs. Exhibitor, Hillhurst Farm, Hillhurst, Quebec.
2nd. "Creta," blk. m., 12-3, 4 yrs. Exhibitor, Robert Davies, Toronto.

SPECIAL CLASSES.

Best Unicorn or Spike Team, to be shown before appropriate Vehicle.

Judges—Messrs. Underhill and Moulton.

1st. Toronto Horse Exchange.
2nd. do

BEST AND BEST APPOINTED PAIR OF HORSES TO CAB AS LET FOR HIRE.

To be bona fide property of owner. Horses to count 60 per cent., cab and appointments, 40 per cent.

1st. P. Maher, 19 Bloor E.
2nd. Fred Doane, 621 Yonge St.

MARE OR GELDING, TO BE SHOWN IN SINGLE HARNESS AND DELIVERY WAGON, ACTUALLY AS USED IN LOCAL DELIVERIES.

Horse to count 50 per cent., wagon and equipment 50 per cent.

JUDGES—Messrs. Underhill, Moulton and Skead.

1st. "Prince," gelding. Exhibitors, The Harry Webb Co., Toronto.
2nd. "J. M. D.," bay g., 16, 5 years. Exhibitors, John Macdonald & Co., Toronto.

PAIR OF MARES OR GELDINGS, TO BE SHOWN IN DOUBLE HARNESS AND DELIVERY WAGON, ACTUALLY AS USED IN LOCAL DELIVERIES.

Horses to count 50 per cent., wagon and equipment, 50 per cent.

1st. { "Glenderboy." / "Thunder." } Exhibitors, A. & S. Nordheimer, Toronto.
2nd. { "Annias," bay g., 15-3, 5 yrs. / "George Washington," bay g., 15-3, 5 yrs. } Exhibitors, John Macdonald & Co., Toronto.

BEST PERFORMANCE OF PROFESSIONAL PRIVATE COACHMAN IN LIVERY, WITH PAIR AND CARRIAGE TO LANDAU, BROUGHAM OR HEAVY VICTORIA.

JUDGES—Messrs. Cary and Campbell.

1st. Walter Keeling, Coachman for T. G. Blackstock, Toronto.
2nd. Terence Brady, Coachman for John Macdonald, Oaklands, Toronto.
3rd. Walter Buddell, Coachman for Albert E. Gooderham, Toronto.

BEST AMATEUR DRIVING OF PAIR OF HORSES TO FOUR WHEELED VEHICLE.

1st. G. A. Case, Toronto.
2nd. Geo. A. Peters, M.D., Toronto.

BEST DRIVING OF TANDEM, OPEN TO HOUSE MEMBERS OF THE COUNTRY AND HUNT CLUB OF TORONTO AND TO MEMBERS OF TORONTO RIDING AND DRIVING CLUB.

1st. G. A. Stimson, Toronto.

BEST RIDING BY GENTLEMAN, OPEN TO MEMBERS OF ANY RECOGNIZED HUNT OR COUNTRY CLUB.

1st. G. A. Carruthers, Toronto.
2nd. Geo. A. Peters, M.D., Toronto.

BEST DRIVING OF A PAIR OF HORSES TO FOUR WHEELED VEHICLE BY A LADY.

1st. Miss Edna Lee, Toronto.
2nd. Mrs. G. M. Davidson, Unionville, Ont.

BEST RIDING BY A LADY, AMATEURS ONLY.

1st. Miss Edna Lee, Toronto.
2nd. Mrs. Carruthers, Toronto.

BEST AND BEST TRAINED POLICE HORSE, ACTUALLY ENGAGED IN SERVICE OF A MUNICIPAL POLICE FORCE AND RIDDEN BY A MEMBER OF THE FORCE; APPOINTMENTS AND UNIFORMS ALSO TO BE CONSIDERED.

JUDGES—Messrs. Underhill, Carey and Campbell.

1st. Patrolman Thomas Wiggins.
2nd. Sergt. Goulding.

In the above list we offered in prizes $2,385, a very large sum to risk when we only received $2,000 from the Government.

As you are all well aware, this second Canadian Horse Show was, like the one held in 1895, a great success as an exhibition of good horses, and no doubt the holding of such annual shows is of immense benefit to the breeders of horses. Sales are made and ideas are enlarged; the breeders mix with the city people to their mutual benefit. Owing to the hard times, this exhibition was not as well attended as the one in 1895, still it was a success, and $552.88 remains to the credit of this Association as excess of receipts over expenditures, as well as $50 in members' fees, or a total of $602.88 to commence next year's campaign.

A word might well be said about the poor attendance of farmers at these shows. A special day was set aside and called the Farmers' Day, with a reduced admittance, also the programme was so arranged that most of the breeding classes were shown on this day, but one could easily see that this good class of our community were conspicuous by their absence. It is hard, we know, to cater to both the farmers and the city people, but the farmers and breeders must know that without the city money the show would not be a success. It is quite probable that the price of admittance was a little too high, and we may be able to reduce it somewhat this coming year, but it must be borne in mind that such exhibitions as the "Canadian Horse Show" must have plenty of funds on hand to make it a success. I sincerely hope that at the next show more of the country friends will attend, and make it a patriotic affair. At none of the former exhibitions were better classes of Thoroughbreds, Hackneys, Clydesdales or Shires shown; there may have been more in a class, but the quality was no better, and to keep up this sort of thing large prizes must be given, and to raise good horses the best sires have to be used. What we are all aiming at is to keep Canada to the front, as formerly, in the breeding of the best for the market.

Besides the holding of shows, this Association has plenty of scope, and should give its opinion on the inspection and licensing of stallions, the kinds of horses to breed for the different markets; in fact, it should make itself a power in this country.

THE FINANCIAL STATEMENT.

The following gives the transactions of the Canadian Horse Breeders' Association, as audited by Clarkson & Cross, chartered accountants. This statement may be somewhat altered if a few donations outstanding be not collected:

RECEIPTS.

Prince of Wales' prize	$ 48 00	
Government grant	2,000 00	
Harry Webb special	100 00	
Clydesdale Horse Association	100 00	
Hackney Horse Society	30 00	
Shire Horse Association	20 00	
Entry fees	318 00	
Proportion of profit on joint transactions with the Country and Hunt Club	276 88	
		$2,892 88

EXPENDITURES.

Premiums paid to breeding classes	$2,055 00	
Judges' fees	285 00	
		2,340 00
Excess of receipts over disbursements		$552 88
Members' fees for 1896		50 00
		$602 88

(Sgd.) HENRY WADE, Secretary-Treasurer.

August 28th, 1896.

Thirteenth Annual Ontario Provincial

FAT STOCK AND DAIRY SHOW

TO BE HELD IN THE

CITY OF GUELPH

ON

December 8th, 9th and 10th, 1896,

UNDER THE AUSPICES OF

THE DOMINION CATTLE BREEDERS' ASSOCIATION.
THE DOMINION SHEEP BREEDERS' ASSOCIATION.
THE DOMINION SWINE BREEDERS' ASSOCIATION.
THE DAIRYMEN'S ASSOCIATION OF EASTERN ONTARIO.
THE DAIRYMEN'S ASSOCIATION OF WESTERN ONTARIO.
THE GUELPH FAT STOCK CLUB.
THE GUELPH CITY COUNCIL.
THE GUELPH BOARD OF TRADE.
AND THE ONTARIO AGRICULTURAL COLLEGE.

Officers.

Jno. I. Hobson, President; Jas. Tolton, Vice-President; F. W. Hodson, Secretary-Treasurer; Major G. B. Hood, Associate Secretary.

Committees of Management.

EXECUTIVE AND PROGRAM.

The President, Vice-President, Secretary, Dr. James Mills, G. E. Day, J. M. Duff, Jno. McCorkindale, J. E. McElderry, Robert Stewart and A. Crosbie.

Committee on Cattle.

Jno. I. Hobson, Wm. Rennie, David McCrae, G. E. Day, A. Johnston, Jas. Miller, Herbert Wright and William Hearn.

Committee on Sheep.

Jas. Tolton, D. G. Hanmer, Richard Gibson and Patrick Hartnett.

Committee on Swine.

J. E. Brethour, J. C. Snell, G. B. Hood and Jno. A. McHardy.

Dairy Committee.

J. W. Wheaton, Prof. Dean, A. F. McLaren, H. Wade and R. G. Murphy.

Superintendent of Building.—Jno. McCorkindale, Guelph.

Joint Secretaries.—F. W. Hodson, O. A. C., Guelph, and Major G. B. Hood, Guelph.

NOTICE.

The following Public Meetings will be held in the City Hall, Guelph, to which all are invited :

THE ANNUAL MEETING OF THE

DOMINION CATTLE BREEDERS' ASSOCIATION,

ON

Monday, December 7th, at 7.30 p.m.

A JOINT PUBLIC MEETING

ON

TUESDAY, DECEMBER 8TH AT 7.30 P.M.

Notable Speakers will address the Audience.

THE ANNUAL MEETING OF THE

DOMINION SHEEP BREEDERS' ASSOCIATION,

ON

Wednesday, December 9th, at 7.30 p.m.

THE ANNUAL MEETING OF THE

DOMINION SWINE BREEDERS' ASSOCIATION,

ON

Thursday, December 10th, at 7.30 p.m.

The Program of each Meeting will be published at a later date.

F. W. HODSON,
Secretary of Association

BINDING SECT. AUG 23 '67